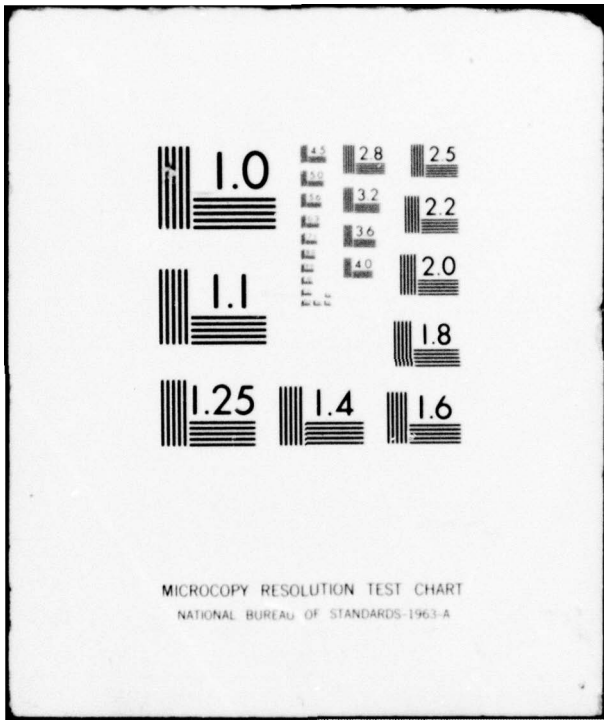
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PEARL HARBOR NAVAL SHIPYARD/
PERA(CRUDES)

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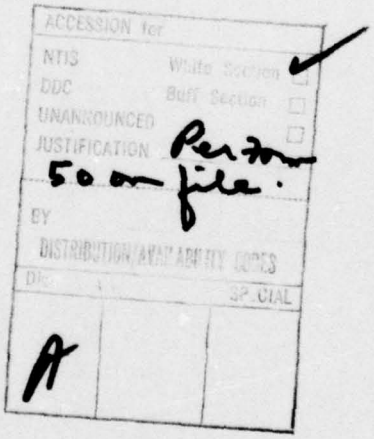
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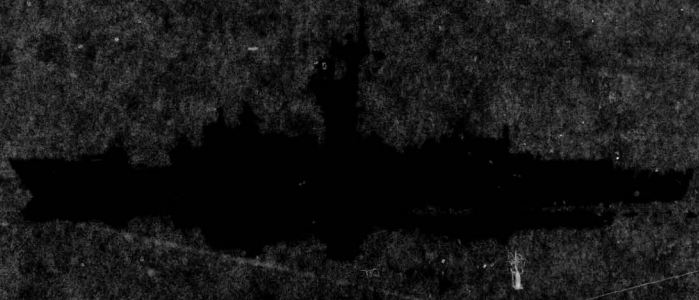
ABSTRACT

This Overhaul Work Booklet for USS RATHBURNE (FF-1057) provides an overview of what the overhaul will encompass, letting each member of the Pearl Harbor Naval Shipyard team know what lies ahead and what he and other team members will contribute toward the successful accomplishment of overhaul objectives. The scheduled date for the overhaul is 26 August 1977 through 23 May 1978.



OVERHAUL WORK BOOKLET:

USS RATHBURNE (FF-1057)



29 August 1977 – 29 [illegible] 1978

OVERHAUL WORK BOOKLET:

USS RATHBURNE (FF-1057)



26 August 1977 – 23 May 1978

DEPARTMENT OF THE NAVY

PEARL HARBOR NAVAL SHIPYARD

FOREWORD

This booklet describes the significant work planned during the 1977-1978 Regular Overhaul of USS RATHBURNE (FF-1057). It is intended to provide a general review of what the overhaul will encompass, letting each member of the overhaul team know what lies ahead and how he and the other team members will contribute toward the successful accomplishment of the overhaul objectives.

In this booklet, the major tasks identified for the RATHBURNE overhaul are described, together with associated schedules and man-hour allocations. Ultimate goals are expressed in terms of Key Overhaul Dates, the meeting of which is one of the basic criteria by which the success of the overhaul will be judged.

RATHBURNE is the sixth FF-1052 class ship to undergo Regular Overhaul (ROH) as a participant in the Pearl Harbor Naval Shipyard's FF-1052 Class Overhaul Improvement Program. She is also the third Navy ship for which the ROH is part of a larger Baseline Overhaul (BOH) directed toward permitting the ship to operate up to 54 ± 6 months before its next Regular Overhaul.

Pearl Harbor Naval Shipyard's goal is to expend 66,772 man-days or less to complete this overhaul. The cooperation of each team member is needed to meet this objective, and to maintain the Shipyard's record of continually increasing the efficiency of FF-1052 class overhauls.

CONTENTS

FOREWORD ii

KEY OVERHAUL DATES 1

SHIP INFORMATION 2

OVERHAUL DATA 3

THE OVERHAUL 5

HULL STRUCTURE 8

PROPULSION PLANT 9

ELECTRIC PLANT 12

COMMAND AND SURVEILLANCE 14

AUXILIARY SYSTEMS 17

OUTFIT AND FURNISHINGS 20

ARMAMENT 22

ENGINEERING/SUPPORT SERVICES 23

APPENDIX A: TYCOM/NAVSEA/ORDNANCE ALTERATION LISTING. . . A-1

APPENDIX B: MAJOR SHIPYARD WORK ITEMS OTHER THAN ALTERATIONS B-1

APPENDIX C: OVERHAUL PROGRESS CHARTS FOR USS RATHBURNE . . C-1

KEY OVERHAUL DATES

Start Overhaul	26 August 1977
Enter Drydock	31 August 1977
Complete Drydocking	22 December 1977
Conduct LOE	29-30 March 1978
Conduct Dock Trial	21 April 1978
Conduct First Sea Trial	1-2 May 1978
Conduct Second Sea Trial	10-11 May 1978
Conduct Third Sea Trial (if required)	16-18 May 1978
Complete Overhaul	23 May 1978

SHIP INFORMATION

RATHBURNE is one of the USS KNOX (FF-1052) class frigates, of which 46 were built. Constructed by Lockheed Shipbuilding and Construction Company, Seattle, Washington, and commissioned on 16 May 1970, RATHBURNE last completed overhaul in May 1974 at Pearl Harbor Naval Shipyard.

RATHBURNE is 438 feet long, has an extreme beam of almost 47 feet, and has a full-load displacement of 4,100 tons. The ship has a single propeller and is driven by a geared turbine actuated by two boilers. Accommodations are provided for about 20 officers and 250 enlisted men.

The ship's armament consists of a single 5-inch, 54-caliber gun mount, one ASROC launcher, one BPDMS launcher, and two Mk 32 triple torpedo tube mounts. RATHBURNE has a LAMPS installation and is equipped with an AN/SQS-26 bow-mounted sonar.

Key personnel on RATHBURNE for this overhaul are:

Commanding Officer:	CDR L.E. Wood, Jr.
Executive Officer:	LCDR P.J. George
Operations Officer:	LT G.L. Howarth
Weapons Officer:	LT D.E. Gabe
Supply Officer:	LT J. Nogosek
Engineering Officer:	LT C.L. Ruggles
Damage Control:	ENS M.A. Witt
ROH Coordinator:	LT G.L. Howarth
SFOMS Coordinator:	LT D.E. Gabe

OVERHAUL DATA

Management

The RATHBURNE overhaul is managed by the Planning Department Type Desk (Code 214.2), LT C. Such and Mr. B.J. Davison (471-3053), with the help of the Assistant Repair Officer, LCDR J. Melanephy (471-3272). LT L. Barron is the assigned Ship Superintendent and is aided by Assistant Ship Superintendent LT A. Boutz and Progressman R. Goo (474-3222). Other shipyard departmental managers/coordinators are:

Design Division:	Mr. H. Kaiser	471-3561
Supply Department:	LCDR J. Lessa	474-2190
Production Engineering Division:	LCDR M. Baratta	471-3379
Combat Systems Office:	Mr. P. Blaney	471-3031
Quality Assurance Office:	Mr. L. Nelson	474-9252
Planning and Estimating Division:	CDR J. Wilson	474-9176
Production Control Branch:	Mr. W. Kay	474-9228

Man-Days

The RATHBURNE overhaul is estimated to require 66,772 man-days of effort, as follows:

Production Man-Days:	58,824*
Non-Production Man-Days:	7,948*

These figures are broken down as shown on the next page.

*Does not include 2.8 percent reduction for FF-1052 Improvement Program.

MAN-DAY ALLOCATIONS FOR RATHBURNE OVERHAUL

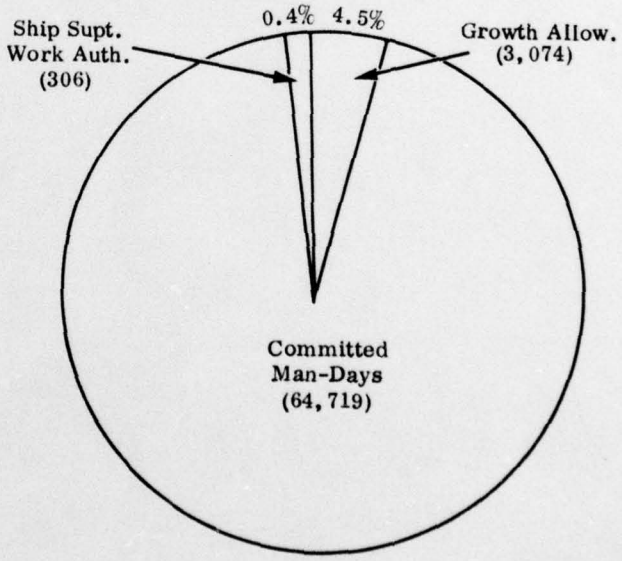
Production Shops

Shop	Man-Days
02	862
06	266
11	3,914
17	2,324
23	331
26	3,639
31	7,179
38	5,675
41	5,705
51	6,833
56	8,289
64	1,742
67	4,951
71	2,622
72	3,141
74	6
99	3,145
	58,824

Non-Production Shops

Shop	Man-Days
05	371
13	16
19/20	1,949
24	4,135
33	171
34	185
35	453
39	0
30/62	668
	7,948

...and allocated, as shown below, at the beginning of the ROH:



NOTE: Man-day totals do not include 2.8 percent reduction for FF-1052 Improvement Program.

THE OVERHAUL

USS RATHBURNE (FF-1057) and USS BREWTON (FF-1086), whose overhauls are scheduled concurrently, are the sixth and seventh ships receiving ROH as part of the Pearl Harbor Naval Shipyard FF-1052 Class Overhaul Improvement Program. The purpose of this program is to reduce the ROH man-day cost and duration by utilizing the advantages of a smooth succession of "heel-and-toe" overhauls without causing adverse effect on the customer ship. So far, the objectives of this program continue to be met for each participating ship.

In line with the foregoing philosophy, a formal statement of ROH objectives for RATHBURNE has been developed, with which the ship's Type Commander representative concurs. These objectives are:

- To raise the ship's material condition to that necessary to ensure trouble-free operation and performance of missions, assuming organizational, intermediate, and depot level maintenance, during the upcoming operational cycle as currently prescribed by CINCPACFLT.
- To bring the main propulsion and associated auxiliary equipment to the condition prescribed by the CINCPACFLT Propulsion Examining Board.
- To achieve a successful full-power trial prior to completion of the overhaul.
- To ensure that the combat system suite is complete and operationally tested.
- To complete the overhaul within the time agreed upon at the start of the overhaul with no C-3 or C-4 CASREPTs.
- To achieve such alterations to the ship as approved by the Type Commander and Chief of Naval Operations.
- To expend the minimum funds and other resources necessary to achieve the above.

A Regular Overhaul requires the accomplishment of two types of work – repairs and alterations. Repairs are the actions taken to restore a ship's hull and its equipment to an excellent operating condition. Alterations fall into two categories: the installation of new systems and equipment, and the modification and updating of existing systems and equipment to improve the ship's capability. For this ROH, the major repairs and alterations planned are listed in Appendixes A and B.

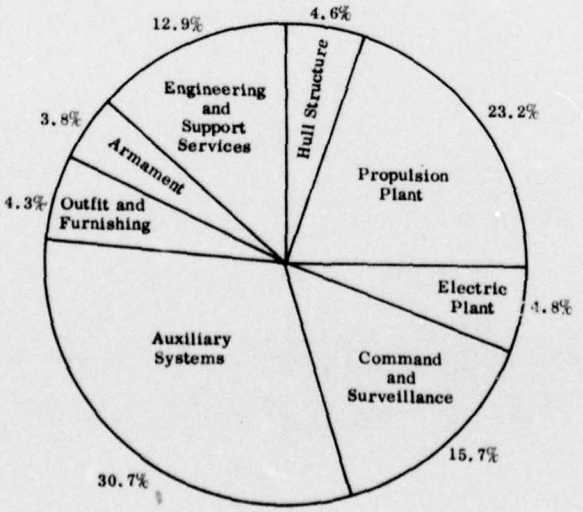
Accomplishment of all repairs and alterations identified as being required during ROH is the responsibility of several activities. Work is assigned to the shipyard, ship's force, and other activities, such as Navy repair ships and tenders, fleet maintenance groups, etc.

The progressing of RATHBURNE's ROH will be evaluated by the entering and updating of key data onto charts such as those presented in Appendix C. As included herein, these sample charts reflect the shipyard effort expended on this ship just up to formal ROH commencement.

To explain the work planned for RATHBURNE, the following sections of this booklet are organized according to systems/functional groups. These are:

- Hull Structure
- Propulsion Plant
- Electric Plant
- Command and Surveillance
- Auxiliary Systems
- Outfit and Furnishing
- Armament
- Engineering/Support Services

For the above groups, the overall shipyard effort will be expended as follows:



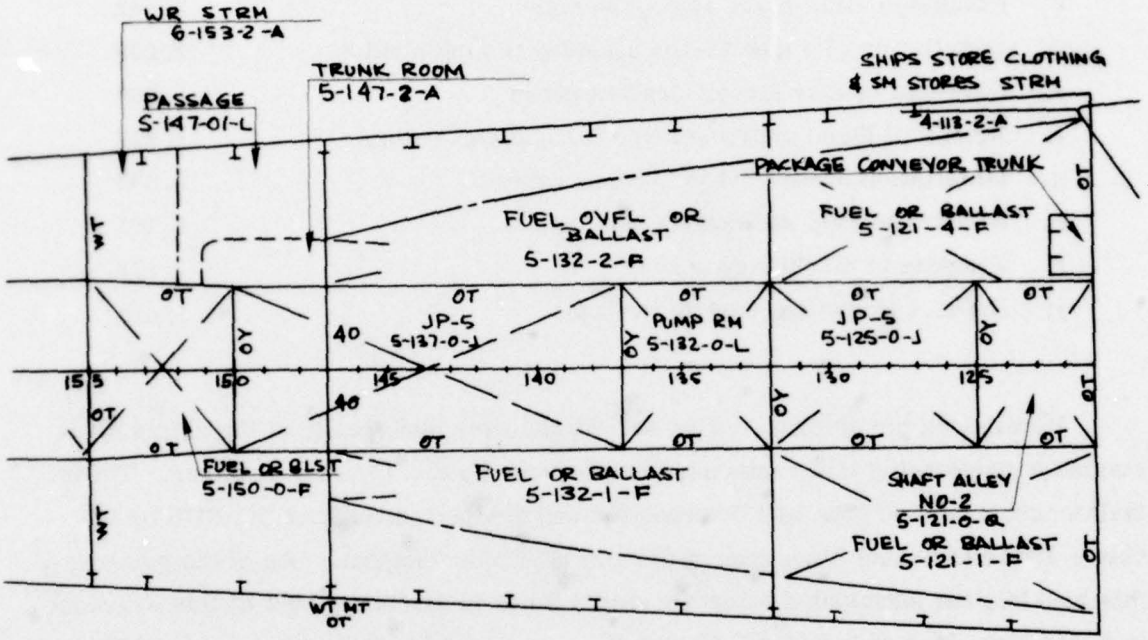
The largest shipyard jobs identified for the RATHBURNE overhaul are:

		Estimated Man-Days
a.	Repairs to 1A and 1B boilers	4,969
b.	Installation of a sewage collection/holding tank system	4,948
c.	Communication space improvements	2,542
d.	Installation of a new 75-ton air conditioning plant	2,008
e.	Overhaul of four forced-draft blowers	1,563
f.	Repair of three ship's service turbine generators	1,282
g.	Installation of HARPOON Weapon System	1,233
h.	Repairs to feed and condensate system	1,181
i.	Painting in machinery spaces	1,115
j.	Repairs to gunfire control system	1,025

Paralleling the shipyard effort will be the time and energy of the ship's crew members performing those jobs assigned to them by the Type Commander. These maintenance-related jobs will be tabulated and tracked throughout the ROH by the Ship's Force Overhaul Management System (SFOMS) Program. As of the printing of this booklet, the anticipated effort by ship's force in direct support of this overhaul is 7,848 man-days of industrial type work, an amount likely to grow as the ROH progresses.

The largest ship's force jobs, in terms of requiring more than 1,000 man-days, are:

		Estimated Man-Days
a.	Preservation of hull and equipment surfaces	4,103
b.	Repair/replacement of valves	1,831


WR STRM
6-153-2-A
TRUNK ROOM
5-147-2-A
PASSAGE
S-147-01-L
SHIPS STORE CLOTHING
& SM STORES STRM
4-113-2-A
PACKAGE CONVEYOR TRUNK
FUEL OVFL OR
BALLAST
5-132-2-F
FUEL OR BALLAST
5-121-4-F
JP-5
5-137-0-J
PUMP RM
5-132-0-L
JP-5
5-125-0-J
FUEL OR BLST
5-150-0-F
FUEL OR BALLAST
5-132-1-F
SHAFT ALLEY
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HULL STRUCTURE

Hull structure work will account for about 5 percent of the total man-day allocation for the RATHBURNE overhaul. The largest job in this category will involve the ship's fuel and water tanks.

Underwater Hull Work

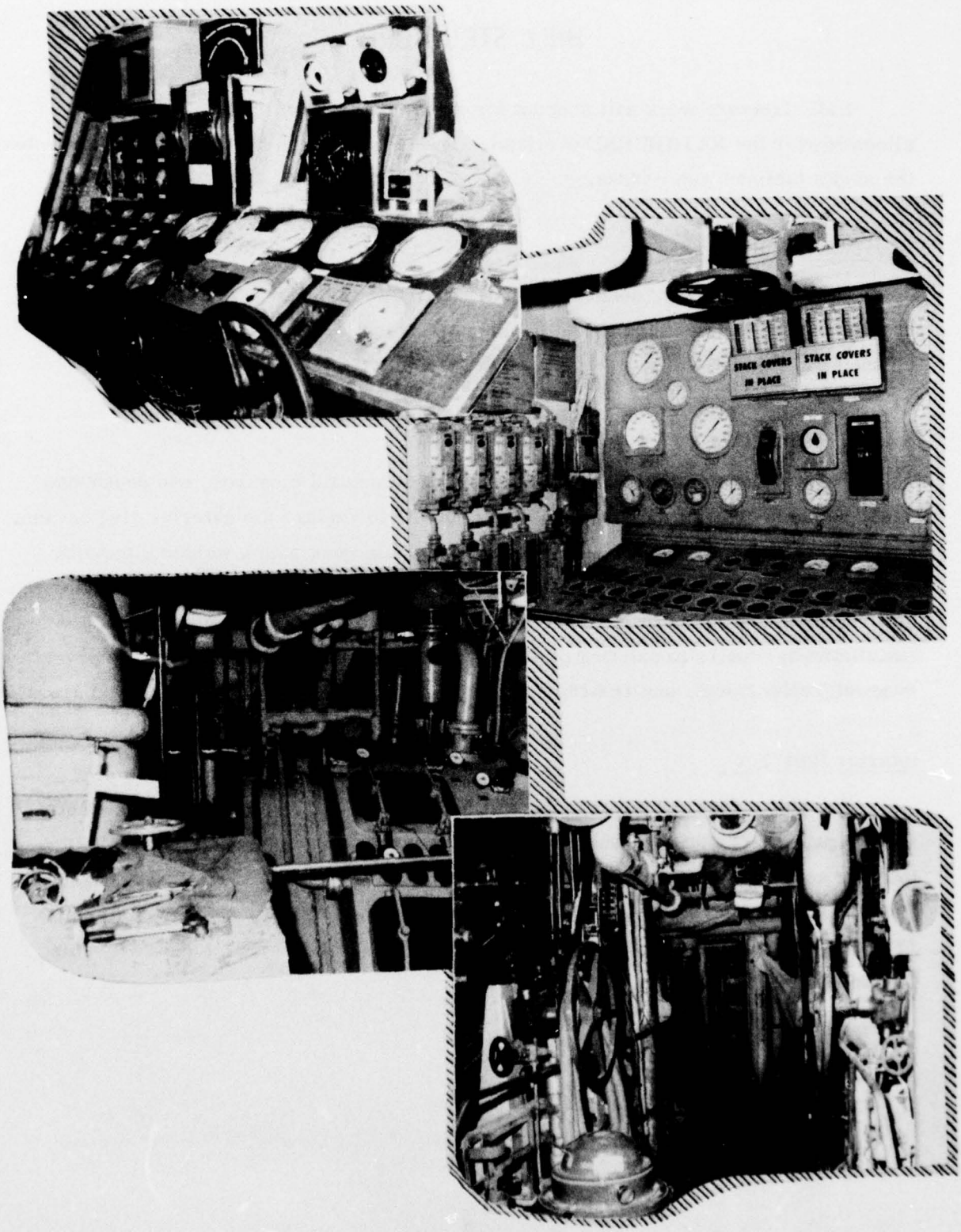
During drydocking, underwater hull repairs to the shell structure, appendages, and sea chests will be made as determined by inspection. The sonar dome will be cleaned and inspected.

Topside Hull Work

Various repairs to the topside structure, structural closures, and deckhouse are scheduled. One of the more extensive jobs is to replace the exterior riveted joint between the aluminum deckhouse side and steel main deck with a welded bimetallic joint (about 328 lineal feet). Other sizable jobs involve structural modifications in the superstructure areas to provide necessary support to new electronic equipment installations; repairs to existing platforms/supports; and the unstrapping, removal/renewal/replacement, and restrapping of most cables in the mast and tetrapod areas.

Interior Hull Work

The ship's fuel and water tanks will be inspected, and represervation and structural repairs accomplished where required. Modifications and repairs/tests to the interior access of the sonar dome are to be accomplished. At least 17 watertight doors, hatches, and scuttles will be replaced by shipyard personnel; an additional 177 watertight closures will have their gaskets renewed and/or be adjusted by ship personnel.


STACK COVERS
IN PLACE
STACK COVERS
IN PLACE

PROPULSION PLANT

Propulsion plant repairs and alterations will account for a considerable part of the total overhaul work for RATHBURNE. Some 40% of the propulsion plant tasks will involve repairs to the ship's boilers. Timely completion of the boiler work is essential to the ship's satisfying the requirements of the Light-Off Examination (LOE) near the end of the overhaul.

Completion of all propulsion plant work is also required prior to the post-repair full-power sea trial. Also, needless to say, the ship must have a reliable main propulsion plant to carry out its assigned missions. The ship's crew is exerting considerable effort in this category, directed toward the successful completion of the LOE; many thousands of man-hours are contained in the hull/equipment preservation and valve-maintenance SFOMS jobs.

Propulsion Boilers

Repair of the two propulsion boilers is one of the largest ROH jobs on RATHBURNE in terms of man-hours. All components of both boilers will be inspected and tested, the soot blower system will be overhauled, refractory will be renewed, burners will be overhauled, and other components will be repaired/renewed as required. Gauges and the automatic combustion control (ACC) system will be repaired and calibrated. Various alterations will be made to improve the safety of boiler operation and to upgrade the ACC system.

Propulsion Steam Turbines

Alterations will be accomplished which require opening of the low-pressure turbine, making repairs to turbine blading, and modifying the high-pressure turbine steam chest. H.P. and L.P. turbine bearings will be inspected and clearances recorded. Rotor position indicators will be replaced.

Propulsion Reduction Gears

The H.P. and L.P. dental couplings will be inspected and repaired. Reduction-gear oil leaks will be corrected, and new sight-flow indicators and three cover plates will be manufactured and installed. A dehumidifier will be installed.

Propulsion Shafting and Bearings

Repair requirements for propulsion shafting, stern tube, and strut bearings will be determined by inspection after drydocking. Line shaft bearings will be inspected and repaired as required.

Propeller

The propeller will be removed, repaired, and reinstalled.

Combustion Air System

All forced-draft blowers (FDBs) will be removed to the shop and receive complete overhauls. The butterfly valves of the in-port FDBs will be repaired. Alterations to the FDB steam admission valves and lubricating oil system will be accomplished.

Propulsion Control System

The remote water-level indicator will be replaced.

Main Steam System

Twenty main steam valves will be repaired in place. The main feed pump guarding valves and the astern throttle valve will be shop-repaired. The main steam piping system will be hydrostatically tested. Valve operating air motors will be repaired, and all pipe hangers inspected and adjusted.

Condensers and Air Ejectors

The main condenser will be hydrostatically tested and the shell ultrasonically tested. The auxiliary SSTG and the auxiliary gland exhaust condensers will be cleaned and tested. The main air ejector will be repaired and its condenser retubed. Gland exhauster fans will be repaired.

Feed and Condensate System

The main feed and main feed booster pumps will be completely overhauled, as will the main and auxiliary condensate pumps. Various repairs will be made to the piping and valves of the feed and condensate system. The freshwater drain tank pumps and motors will be completely overhauled. Alterations will be accomplished to provide automatic start capability for the #1A main feed booster pump and to install an ion exchanger.

Circulating and Cooling Seawater System

Various repairs to valves and strainers in the auxiliary machinery cooling water system will be made, including replacement of the suction and discharge cooling hoses of the auxiliary seawater circulating pump. The main and auxiliary circulating seawater pumps will be completely overhauled.

H.P. Drain System

An alteration will be accomplished to provide a near maintenance-free drainage system. Also, 50 high-pressure steam drain valves will be replaced.

Uptakes

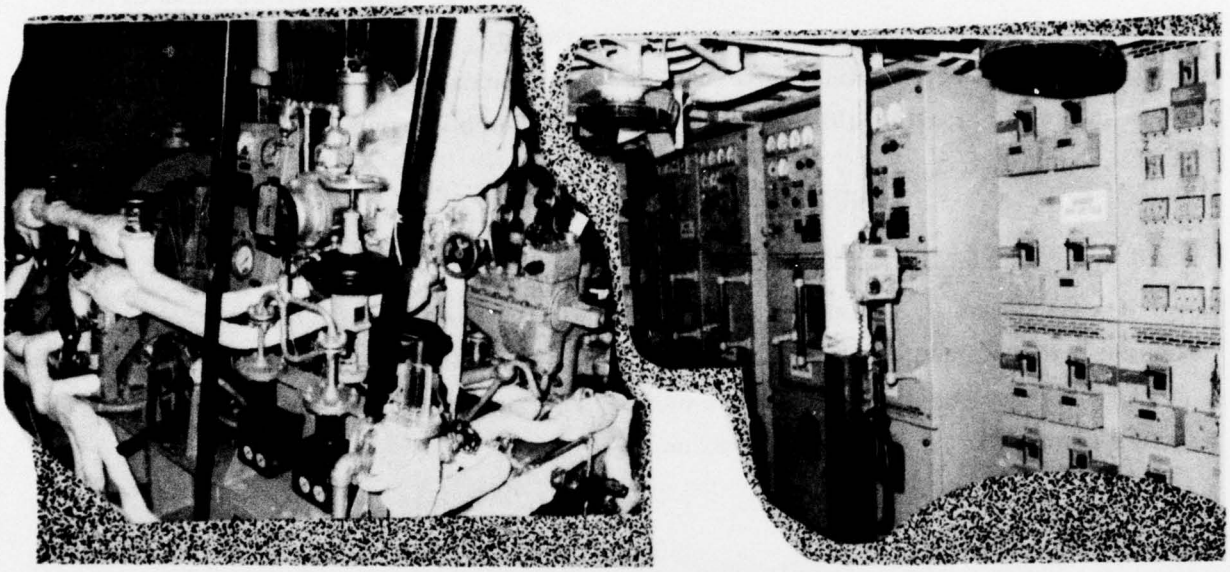
Expansion joints will be renewed. Insulation, sheathing, and riveted joints will be repaired/replaced. Damper bearings will be modified. The drain piping system will be renewed.

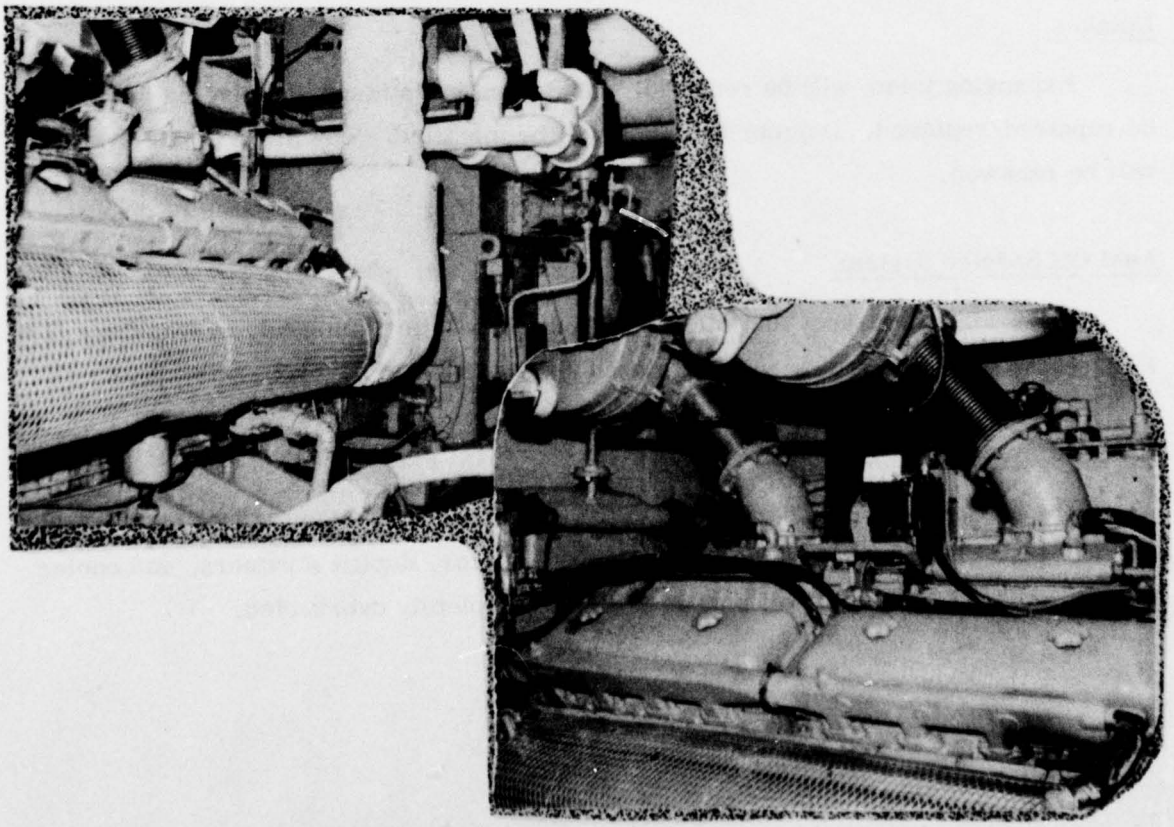
Fuel Oil Service System

The main and in-port fuel oil service pumps will be completely overhauled. The F.O. service system piping will be flushed and tested, and several valves repaired.

Lube Oil System

The attached and standby pumps of the main lube oil system will be completely overhauled. The main propulsion lube oil precipitator, duplex strainers, and cooler will be repaired. The lube oil purifier will be completely overhauled.





ELECTRIC PLANT

For RATHBURNE's electric plant, most of the shipyard effort will be dedicated to repair of existing equipment; the total effort to be spent on electric-plant improvement will be about 5 percent of the total overhaul manpower allocation. More than one-third of the shipyard's work in this area will involve ensuring operational reliability of the ship's service turbo-generators (SSTGs).

Electric Power Generation

Repair of the SSTGs is one of the larger jobs to be accomplished during the overhaul. Specific work items are planned for each generator. Turbine governors, trips, valves, and lube oil systems will be repaired. A post-overhaul load test will be conducted. The ship's service diesel generator (SSDG) and its engines and supporting systems will be repaired and tested. Air starting motors will be replaced on both engines. Alterations will be made to the lube oil systems of the SSDG engines. The No. 1 and No. 2 400-Hz motor generator sets will be modified and overhauled. Four rectifiers will be repaired.

Power Distribution System

An alteration will be made to provide power to one freshwater drain tank pump from a vital power panel. New electrical outlets will be installed in the helo hangar. Seven electrical switchboard circuit breakers will be overhauled and 28 meters cleaned and calibrated. Miscellaneous repairs will be made.

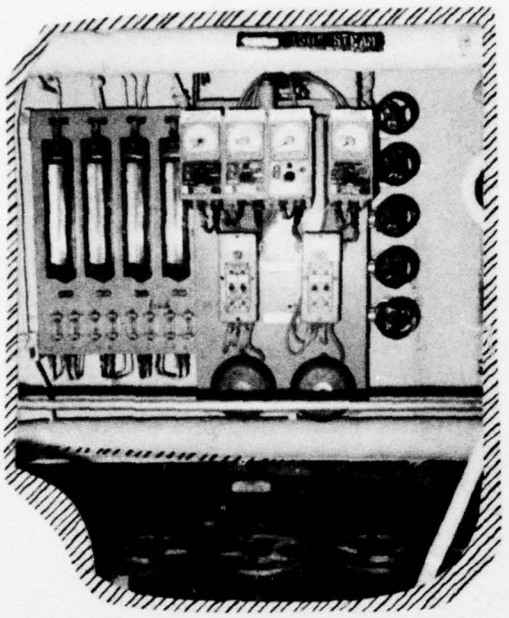
Lighting System

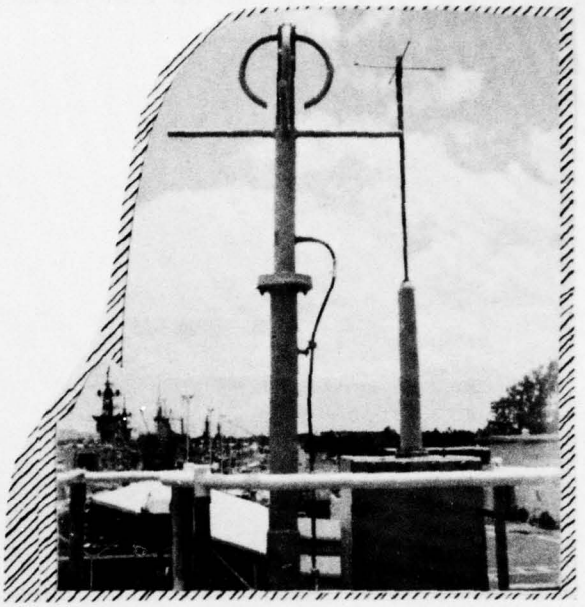
An alteration will be accomplished to upgrade the lighting in the fireroom by the replacement of existing incandescent fixtures with about 50 fluorescent fixtures.

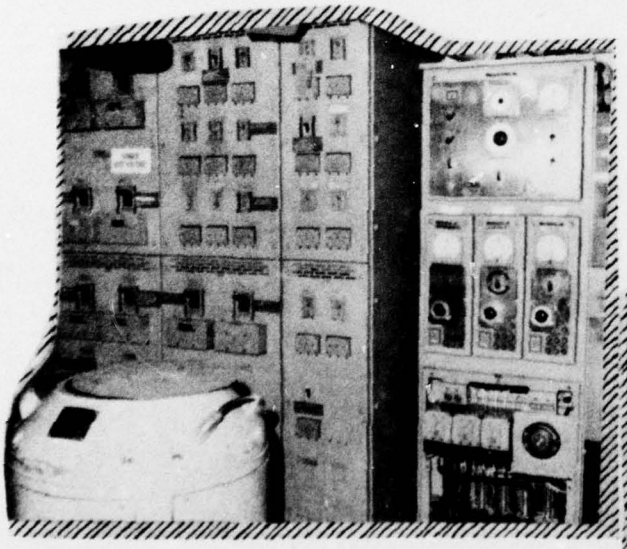
Power Generation Support Systems

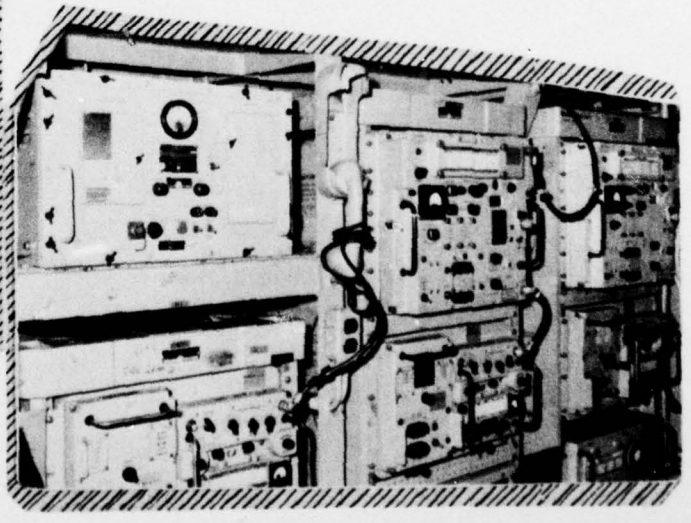
The SSTG lube oil system will be flushed and the strainers and coolers cleaned and repaired. Attached lube oil pumps will have a mod kit installed. Vent-fog and

centrifugal filters will be installed on each SSTG. The diesel seawater circulating pumps will be overhauled and the heat exchangers repaired.









COMMAND AND SURVEILLANCE

Sixteen percent of the shipyard overhaul effort will be concentrated in improvements within this equipment category. The largest expenditure of shipyard manpower (about one-fourth of the total for this area) will be in renovating the radio communications spaces and systems to provide RATHBURNE with a modern, space-age communications capability. In addition, the ship's crew members will expend almost 1,000 man-days of effort toward the overhaul of equipment in this category.

Major jobs to be performed by the shipyard in the command and surveillance area are discussed below.

General

Antenna radiation pattern tests and inport/underway surveys for hull-generated electromagnetic interferences will be conducted.

Command and Control Systems

The radar distribution switchboard and associated radar displays will be repaired. The radar trainer equipment will be overhauled.

Navigation Systems

The gyrocompass, control cabinet, and power supply will be overhauled. Repairs and modifications will be made to the underwater log system, dead-reckoning indicator (DRI), dead-reckoning analyzer (DRA), and NC-2 plotter. The stern navigation light will be repaired. A wind direction and speed indicator will be installed in the CIC. The fathometer will be overhauled and its transducer replaced. The TACAN set will be repaired and its antenna replaced. The antenna group for the loran system will be replaced.

Interior Communications

Various sound-powered telephone circuits and intercom announcing systems will be repaired. Certain of the alarm, safety, and warning circuits will be repaired, and new circuits will be added as alterations. Repairs will be made to various indicating, ordering, and metering circuits.

Exterior Communications

One of the larger jobs in the overhaul is an alteration to improve the communications spaces. In addition, major equipments of the radio system will be repaired. The latest in satellite communication equipment and a new communication quality-monitoring system will be installed. Antennas will be overhauled. Teletype and crypto equipment will be repaired by forces afloat. Dial telephones for use with shore lines will be installed in a total of nine offices, watch stations, and staterooms.

Surface Surveillance Systems

The AN/SPS-10B surface search radar will be overhauled and its antenna replaced. The AN/SPS-40B air search radar system will be overhauled. IFF system equipment will be repaired.

Underwater Surveillance Systems

The AN/SQS-26CX sonar system and its power supply will be overhauled.

Countermeasures Systems

Most of the ECM equipment and the degaussing system will be overhauled.

Fire Control Systems

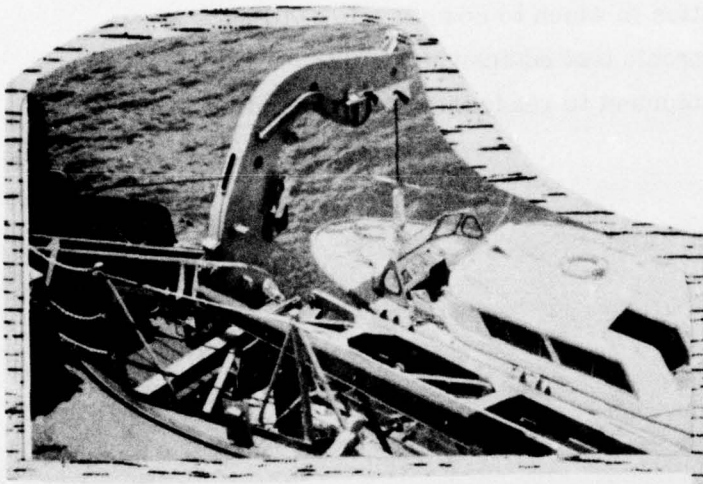
Much of the gun fire control system (GFCS) will be overhauled. A combat system battery alignment will be conducted in drydock and afloat. Various outstanding ORDALTs will be accomplished (see Appendix A, Section III). The guided missile FCS and the underwater battery FCS will be overhauled. A weapon/electronic system integrated test will be conducted upon completion of all repairs and modifications.

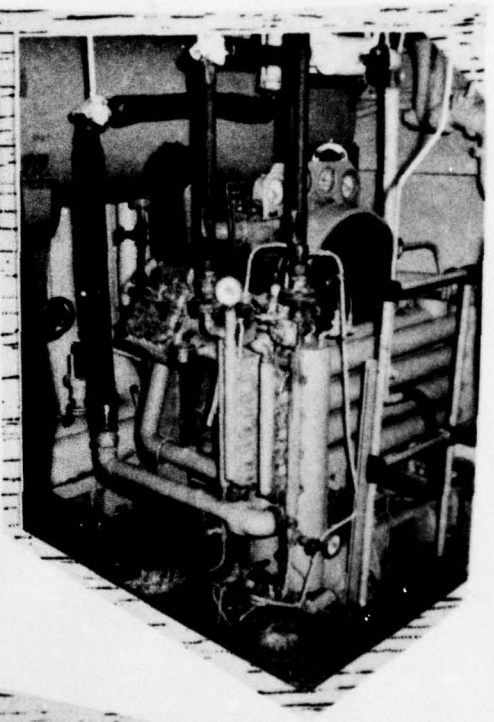
LAMPS

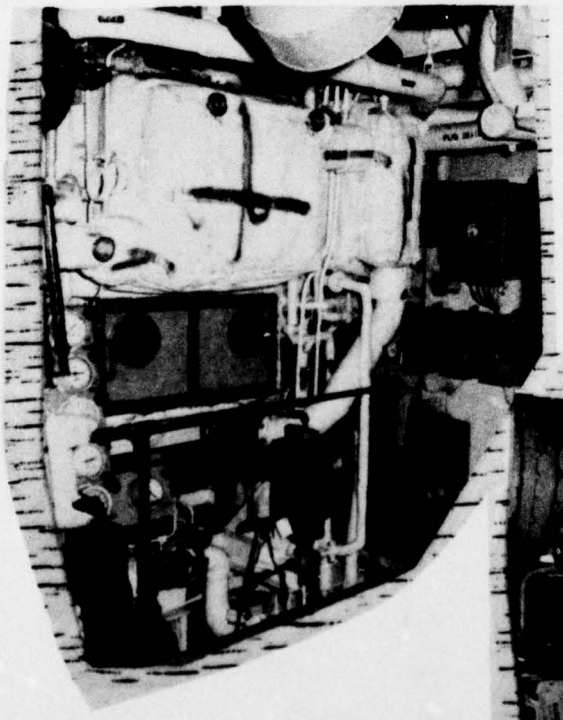
A LAMPS optical landing system will be installed.

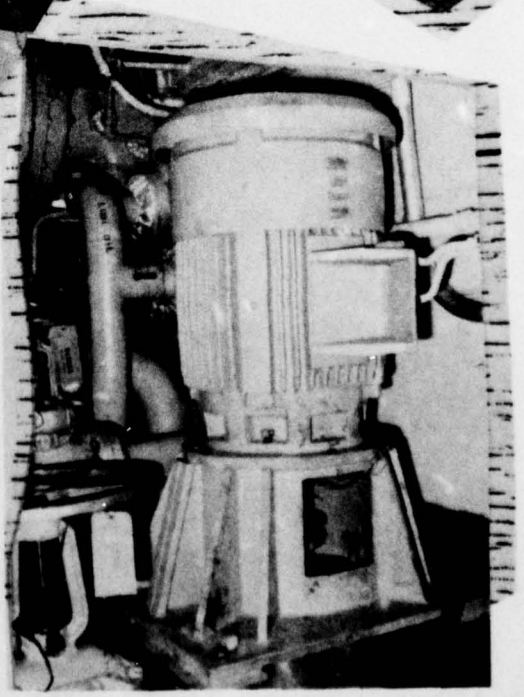
Test Equipment

Ship's force will install facilities in which to conduct interim Phase A calibration of general-purpose electronic test equipment (GPETE). The shipyard will repair various items of test equipment to ready them for calibration.









AUXILIARY SYSTEMS

About 30 percent of the shipyard's overhaul manpower for RATHBURNE will be employed for making the needed improvements to the ship's auxiliary systems. Of that effort, about 42 percent will be directed toward major maintenance of existing equipment; while 22 percent will be used in making RATHBURNE capable of meeting the ecological demands of her operating environment.

General

Gauges and thermometers (50 each) will be repaired and calibrated by forces afloat. Miscellaneous lagging repairs will be accomplished, both in and out of machinery spaces.

Climate Control

The filter cleaning room and steam heating lines to after-steering will be cleaned and repaired. Several ventilation fans will be overhauled, and cooling coils will be cleaned and hydrostatically tested. Alterations will be made to improve ventilation in the after head, scullery, and the 5"/54 carrier room. Equipment of the air conditioning plant will be overhauled. One of the bigger jobs of the overhaul is the installation of a new 75-ton air conditioning plant, including the creation of a new A/C machinery room. The refrigeration system will be overhauled.

Seawater Systems

Sea valves will be inspected and repaired, including the main circulating seawater valves (about 46). Rubber expansion joints in the main circulating water system will be replaced. Four fire pumps will be renewed, and their motors and controllers repaired. The firemain system will be cleaned and tested, and repairs made to piping, valves, and sprinkling systems. A new auxiliary machinery seawater cooling pump, including sea chest, will be installed. Various repairs will be made to the drainage systems. The bilge and fuel oil stripping pump will be overhauled by the shipyard; repairs to system piping will be by ship's force.

Freshwater Systems

Both distilling plants will be overhauled, including pumps, motors, eductors, gauges, etc. Several distilling plant alterations will also be accomplished. Potable water pumps will be overhauled, and one potable water eight-valve manifold will be repaired. Four water heaters will be replaced. The radar/sonar cooling system will be flushed by the shipyard, and the cooling water pumps and heat exchangers repaired by forces afloat.

Auxiliary Steam and Drains

Auxiliary steam system piping and valves will be repaired and tested. A new corrosion-resistant steel freshwater drain tank and gauge glass will be installed. An alteration to replace the boiler bottom-blow piping will be accomplished.

Fuel Systems

The fuel-oil fill, transfer, and stripping system will be inspected, tested, and repaired. The F.O. transfer pump will be overhauled, as will the JP-5 transfer pump and motor.

Compressed Air Systems

The H.P. air compressors and motors will be overhauled. Gauges will be repaired and calibrated, valves repaired, and the piping system flushed. The air compressors and lubricating water coolers and pumps will be overhauled. Emitter belts will be tested and flushed.

The L.P. air receivers will be cleaned and tested. Several alterations to the L.P. air system will be made, including replacement of two L.P. air compressors.

An alteration will be accomplished that will provide new type dehydrators and other modifications to the vital/non-vital/electronic dry-air systems. Piping will be flushed.

Fire Extinguishing System

The AFFF/PKP systems will be tested and repaired. Alterations to modify the helo hangar fixed-foam system will be made by forces afloat. Deep fat fryer fire-protection alterations will be accomplished.

Steering System

The steering gear system will be overhauled. The rudder will be inspected and repairs accomplished if required.

Fin Stabilizer

The hydraulic units, motors, and controllers of the fin stabilizer system will be overhauled.

Underway Replenishment Systems

The ASROC and torpedo overside booms, slings, portable davits, and ammo dumbwaiter will be tested. Replenishment-at-Sea (RAS) stations and equipments will be inspected and repaired as appropriate. The Fueling-at-Sea (FAS) pads and staples will be relocated.

Anchor Handling and Stowage

The anchors and chains will be cleaned, inspected, and preserved. Minor repairs to the anchor windlass will be accomplished and a load test applied. Alterations to the 4,000 and 8,000 pound anchors will be accomplished.

Boat Handling and Stowage

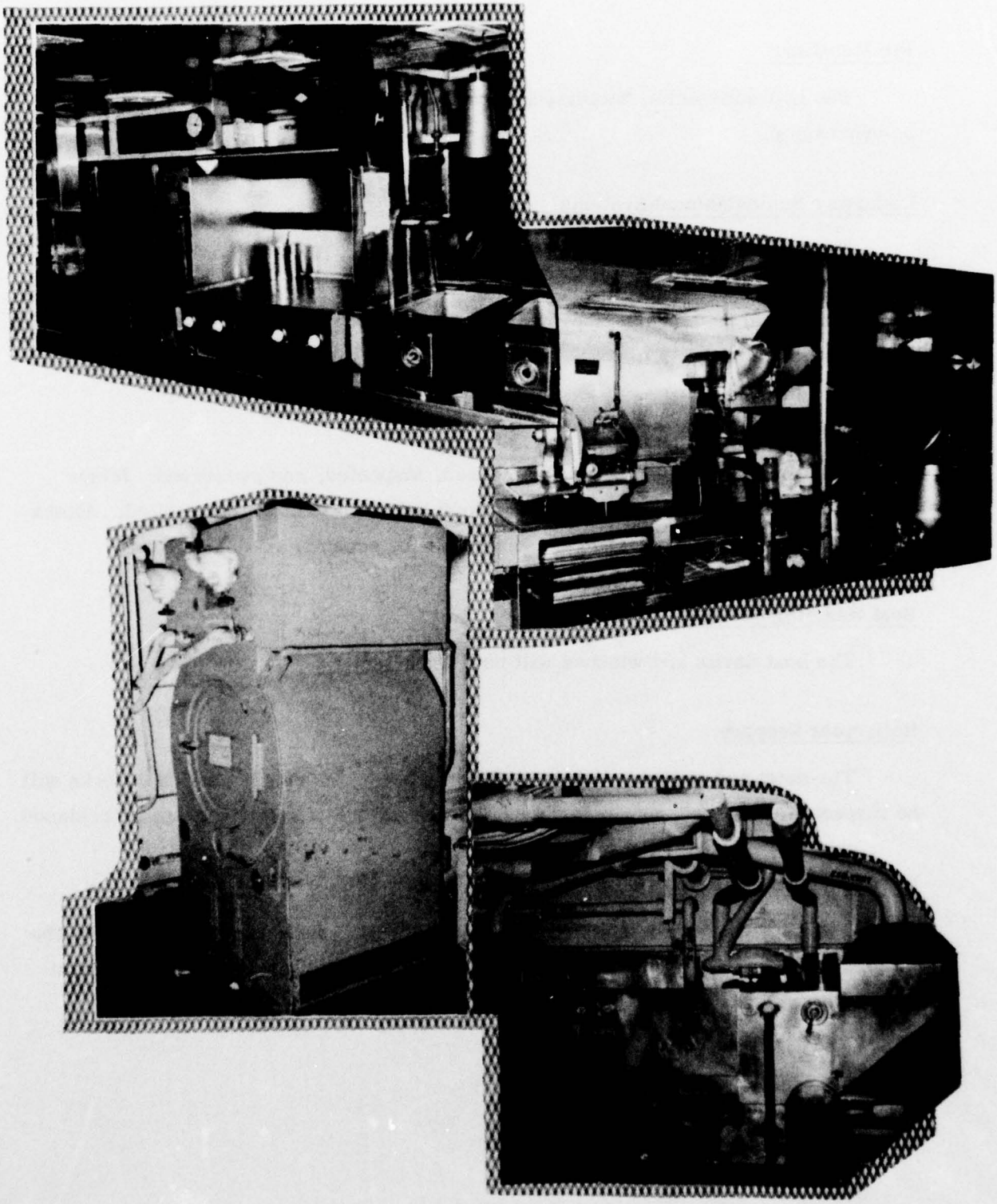
The boat davits and winches will be overhauled.

Helicopter Support

Tie-down and securing fittings will be tested. The hangar and flight decks will be inspected, repaired, and resurfaced. Five sections of safety net will be replaced.

Environmental Pollution Control

A sewage collection, holding, and transfer (CHT) system will be installed (the largest job of the overhaul). Evaporator discharge piping will be modified to minimize bilge water quantity.



OUTFIT AND FURNISHINGS

About 60 percent of the shipyard effort in this area will be to preserve interior and exterior areas of the ship. Most of the remaining effort will be directed toward crew habitability items, the largest of which is the installation of wardrobe lockers in five berthing compartments.

Hull Fittings

One davit socket and eight deck sockets will be manufactured and installed. The jack-staff rack will be modified. About 26 new lifeline stanchion deck sockets will be fabricated and installed. Heavy-weather lifelines will be installed, as will additional lifelines and stanchions. Boat-boom and portable davits will be tested. Balanced doors in the engineroom, fireroom, and auxiliary machine room will be replaced.

Preservation

The underwater hull will be cleaned and painted. Machinery spaces, pumproom bilges, and shaft alleys will be painted. The cathodic protection system will be inspected and repaired.

Insulation

Miscellaneous hull insulation will be replaced.

Refrigerated Spaces

Refrigerated-space doors and frames will be replaced.

Crew Spaces

New crew wardrobe lockers will be installed in five berthing compartments.

Commissary Spaces

Various equipment in the commissary spaces will be repaired or replaced, including the ovens, griddles, dishwashing machine, and galley reefer.

Laundry

The tumbler dryer and washer extractor will be replaced.

ARMAMENT

Work on the ship's armament will require about 4 percent of the ROH manpower planned for RATHBURNE. This major project within this category is the installation of the HARPOON weapon system; however, an almost equivalent amount of effort will be expended in maintenance and improvement of the existing ASROC system and its supporting elements. The combination of ASROC/HARPOON work will require over three-fourths of the shipyard effort in the armament area.

Guns

Leaks in the anti-icing system for the 5"/54 cal. gun mount 51 will be repaired, as will discrepancies in the operation of the carrier control valve block.

Launchers

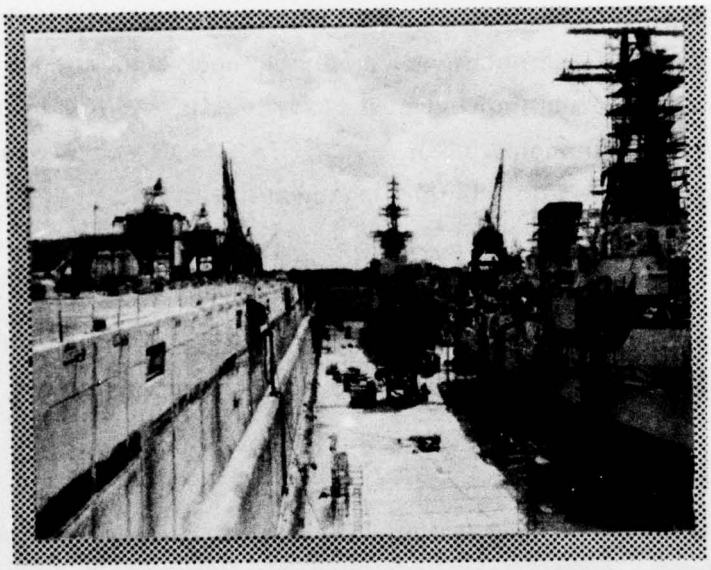
The Mk 13 loader will be load tested. The ASROC launcher will be exchanged for a unit that has been refurbished in a turnaround program conducted at the Naval Ordnance Station, Louisville, Kentucky. The HARPOON weapon system will be installed as an alteration. Improvements will be made to the ship's torpedo launching capability.

Small Arms

An alteration to improve small-arms security will be accomplished.

Pneumatic Chain Hoists

One 1000-pound pneumatic chain hoist will be load tested. The other will be replaced with a new 2000-pound unit.



ENGINEERING/SUPPORT SERVICES

About 13 percent of the shipyard's ROH effort will be devoted to RATHBURNE's engineering/support services, with most of the work relating to routine items usually associated with any ship overhaul. From a man-hour standpoint, there are three major jobs in this area, all of about the same magnitude and requiring almost one-fourth of the total effort for engineering/support services overhaul work. These include providing and closing necessary access openings in the hull, providing needed service connections and rigging, and "Wheelering" of bilges and tanks.

Inspections

A Pre-Overhaul Test and Inspection (POT&I) has preceded the ROH. While the ship is drydocked, a comprehensive mechanical inspection of the stern tube, strut bearing, propeller, zincs, rudder, rope guards, and fairwaters will be conducted. Ship-provided samples of lube and hydraulic oil will be analyzed.

Services

Throughout the overhaul, numerous services will be provided RATHBURNE as required. Typical services include:

- Ground rigger and crane
- Temporary utilities for ship and yard force – fresh and salt water, steam, air, telephone, portable generator during docking/undocking, etc.
- Provision and removal of cradles and brows
- Fire alarm installation and protection
- Gas testing of compartments
- Small boat handling/stowage
- Portable latrine locations
- Installation of temporary dehumidifier and air conditioning units (subject to availability)

– Recharging of expended CO_2 flasks

– Removal of safety hazards; provision of safety related devices.

Drydocking

RATHBURNE will be in Dry Dock #4 with USS BREWTON (FF-1086) for 128 days.

Bilge/Tank "Wheelering"

Forty-five tanks and the bilges of shaft alley #2, auxiliary machinery room #1, and the fireroom will be cleaned by the Wheeler process.

Access Openings

At least 18 temporary access openings (and closures) will be made in as many compartments to allow for major equipment removals and subsequent reinstallations aboard RATHBURNE.

System Tests

Post-overhaul tests to demonstrate satisfactory operation of hull, machinery, electrical, electronic, and weapon systems will be performed.

Trials

Shipyard assistance will be provided in the preparation for and conduct of a dock trial and as many as three sea trials. At least one of the sea trials will include a full-power test of the propulsion plant.

Ship's Force Overhaul Management System

Shipyard facilities and technical assistance will be provided throughout the ROH to assist the ship in the implementation and updating of the SFOMS program.

Selected Record Data and Drawings

Upon completion of the controlling work, the shipyard will provide the ship with revised/updated documents that reflect the modifications made during ROH. These documents will include technical manuals, training aid booklets, Ship's Information Book, Ship's Drawing Index, Damage Control Book, Docking Drawing, Booklet of General Plans, etc.

Ship's Allowance List

Shipyard assistance in updating and submission of the COSAL Index, SECAS, and SAIL will be provided.

APPENDIX A

TYCOM/NAVSEA/ORDNANCE ALTERATION LISTING

	Page
Section I — TYCOM Alterations	A-3
Section II — NAVSEA Alterations	A-9
Section III — ORDALTs.	A-13

TYCOM/NAVSEA/ORDNANCE ALTERATION LISTING

SECTION I - TYCOM ALTS

Job Order # 39-654-	Work Description	Alt. ID #	Done on USS HOLT	Man-Day Estimate*	Total $ Estimate
13701	Structl Detail Mods 02 Level	166D	Yes	27	6,145
	Structl Detail Mods FR 60,42 Level	269D	Yes	FA	FA
15002	Expansion Joint & Waterway Bar Modifications	356D	Yes	77	13,525
15002	Replace Bimetallic Deck House/Coaming Joint	360D	No	302	68,735
16302	Install Main Condenser Overboard Discharge Extension Lip	481D	No	16	3,642
63101	Raised Hatch/Package Conveyor Trunk Modifications	345D	Yes	69	15,704
22104	(2) Boiler Drum Pilot Valve & (2) Actuating Line Modifications	255D	Yes	47	10,697
22108	Modify Boiler Superheater Tube Support Plates	408D	No	627	142,705
53401	Modify (2) Boiler Casings Steam Smothering	300D	Yes	37	8,421
22102	Install Automatic Combustion Control/Feedwater Control Gages	146D	Yes	65	14,794
22108	Install Water Gages on Boilers Yardway	150D	No	31	7,056
22108	Install Lower Furnace Side Casing Access Door on Boilers	197D	No	31	7,056
22108	Modify Lower Rearwall Header Support Beam	256D	No	14	3,186
23102	HP Turbine Stm Chest Modifications	283D	Yes	156	35,506

*Includes 2.8% reduction in estimates to reflect FF-1052 Improvement Program.

SECTION I - TYCOM ALTS

Job Order # 39-654-	Work Description	Alt. ID #	Done on USS HOLT	Man-Day Estimate*	Total $ Estimate
24101	Install Main Reduction Gear LO Vent Baffles	349D	Yes	9	2,048
25101	Modifications on 4 Forced Draft Blowers	113D	Yes	52	11,835
25302	Replace/Remove Superheater/Rotating Equipment HP Drain Traps	404D	Yes	14	3,186
25506	Main Feed Pump Discharge Gages Repair	350D	Yes	46	10,470
25506	Main Feed Booster Pump (#1A) Automatic Start	279D	Yes	56	12,746
25902	Modify Outer & Inner Smokepipe Damper Bearings	273D	Yes	56	12,746
25903	Modify Uptake Drain Piping	419D	No	97	22,077
26103	Verify Hagan Valve Spring Part # on Fuel Control Valve	196D	No	1	228
26103	Install 1 Swing Check Valve in Common Boiler Recirculation Line	352D	Yes	30	6,828
31103	Replace SSDG Air Starters & Install Lubricators	363D	Yes	35	7,966
31103	Install 2 Governor LO Filters SSDG Engines	369D	Yes	22	5,007
31401	Modify 100 kW 400 Hz MG Sets	291D	Yes	25	5,690
31401	Improve 400 Hz MG Set Control Circuit	222D	Yes	50	11,380
	Power Supply Modification to Microfilm Reader Printer	251D	Yes	FA	FA

*Includes 2.8% reduction in estimates to reflect FF-1052 Improvement Program.

SECTION I - TYCOM ALTS

Job Order # 39-654-	Work Description	Alt. ID #	Done on USS HOLT	Man-Day Estimate*	Total $ Estimate
32104	Provide Vital Power to Fresh Water Drain Tank Pump	338D	Yes	33	7,752
	Provide 28VDC and 115VAC 400 Hz Electrical Receptacles in Helo Hangar	342D	Yes	FA	FA
33102	Upgrade Lighting in Fire Room	390D	Yes	120	27,312
31102	Modify Attached LO Pump on all SSTG	403D	Yes	42	9,559
42602	Install MK 19 Gyro Modifications	179D	Yes	50	11,380
42601	Modify MK-NC2 Plotter System	281D	No	47	10,697
	Install ECM Room #3 High Temperature Alarm in CIC	425D	Yes	FA	FA
55106	Install Prairie Air High Temp Alarm System	317D	Yes	36	8,194
44107	Modify Antenna 3-1	319D	Yes	49	11,152
44107	Remove Antenna 2-3	412D	No	57	12,973
	Work to Provide Phase A Calibration Facilities and GPETE Stowage	398F	No	FA	FA
51202	Improve Scullery Venting	282D	No	240	54,624
	Replace Flushing Water Reducing Valves	130F	No	FA	FA
52201	Correct Deficiencies in Wet Magazine Sprinkler System	334D	Yes	63	14,339
52201	Correct Deficiencies in Dry Magazine Sprinkler System	339D	Yes	88	20,029

*Includes 2.8% reduction in estimates to reflect FF-1052 Improvement Program.

SECTION I - TYCOM ALTS

Job Order # 39-654-	Work Description	Alt. ID #	Done on USS HOLT	Man-Day Estimate*	Total $ Estimate
52201	Correct Deficiencies in Thermo-Pneumatic Sprinkler Control System	424	No	22	5,007
52301	Reroute Washdown Piping	178D	No	42	9,559
52403	Modify Bronze Globe Valves	288D	Yes	31	7,056
	Modify Torpedo Magazine Gravity Cooler Drains and Connect to Ship's Drainage	128F	No	FA	FA
33301	Replace Water Heaters	430D	No	156	35,506
53101	Modify Distilling Plant Division Plate	156D	Yes	40	9,104
53101	Install Drain Line in Distilling Plant Air Ejector Steam Supply	418D	No	20	4,552
53105	Replace Evaporator Sea Water Regulating Valve	278D	Yes	12	2,731
53401	Install 150 PSI Auxiliary Steam Gate Valve	199D	Yes	18	4,097
53407	Install Fresh Water Drain Tank Gage Glass	229D	Yes	27	6,145
53401	Install Shore Steam Condensate Drainage Piping	247D	Yes	35	7,966
55107	Install Prairie-Masker Sys Blowdown Valve and Hose Connection	224D	Yes	12	2,731
55107	Modify Prairie-Masker System	316D	Yes	21	4,780
55111	Install Filter/Oiler on LP Air Line	318D	Yes	12	2,731

*Includes 2.8% reduction in estimates to reflect FF-1052 Improvement Program.

SECTION I - TYCOM ALTS

Job Order # 39-654-	Work Description	Alt. ID #	Done on USS HOLT	Man-Day Estimate*	Total $ Estimate
55105	SSDG Air Start Relief Valve Modification	320D	No	24	5,462
55503	Fixed Foam Conversion (Helo Hangar)	270D	Yes	FA	FA
56101	Renew/Secure Pins to Feedback Linkage	489D	No	447	101,765
56101	Manufacture/Install Positive Locks on Steering Room Plug Valves	118D	No	15	3,414
57101	Relocate FAS Padeyes and Staples	366D	No	23	5,309
58104	Replace 8000 lb. Anchor Link & Shackle	400D	Yes	33	7,511
58106	Modify Anchor Hardware	473D	No	64	14,566
58302	Modify Boat Davit Winch Brake	393D	Yes	44	9,955
58302	Provide Spring Load Binders for 25' Motor Whale Boat Aft Davit Arm	314D	Yes	11	2,433
58302	Replace Port/Starboard Davit Winch Drums	463D	Yes	59	13,495
63106	Insulate Air Conditioned Space Bulkhead	180F	No	FA	FA
63801	Replace Refrigerator Doors	422D	Yes	39	8,870
64002	Provide Crew Wardrobe Lockers	221D	Yes	314	71,466
72203	Replace Overside Handling Hoist w/2000# Hoist	245D	Yes	105	23,893
72201	Replace ASROC Hydraulic Pump	248D	Yes	75	17,070

*Includes 2.8% reduction in estimates to reflect FF-1052 Improvement Program.

SECTION I - TYCOM ALTS

Job Order # 39-654-	Work Description	Alt. ID #	Done on USS HOLT	Man-Day Estimate*	Total $ Estimate
75203	Modify Torpedo Hoist Sway Brace Modifications	335D	Yes	9	2,048
76301	Improve Small Arms and Topside Ordnance Security	373D	Yes	216	49,162

*Includes 2.8% reduction in estimates to reflect FF-1052 Improvement Program.

SECTION II - NAVSEA ALTS

Job Order # 39-654-	Work Description	Alt. ID #	Done on USS HOLT	Man-Day Estimate*	Total $ Estimate
16501	Sonar Dome Rubber Window Air Lock Door Repairs	297K	Yes	261	61,220
17101	Lamps Installation Modifications	203K	Yes	104	24,394
44103	AN/WSC-3 Antenna Structural Modifications	225K Rev.	Yes	105	24,629
22102	Install Propulsion Plant Air Locks for ACC System and 2 Main Feed Pumps	258K	Yes	101	23,691
22102	Replace Fresh Water Valve Positioners	233K Rev 2	Yes	17	3,988
25101	Forced Draft Blower Steam Admission Valve Modifications	201K	Yes	214	50,196
25202	Replace Remote Water Level Indicator	234K	Yes	196	45,974
25502	Ion Exchanger Modification & Test	347K	Yes	257	60,282
31102	Install L.O. Vent Fog Precipitators, 3 SSTGs	265K	Yes	81	18,999
43602	Install Modifications for Circuit 1EC, L.O. Low Pressure Alarm	54K	Yes	53	12,432
44001	Communication Space Improvement	84K Rev 2	Yes	2,471	579,598
44001	Install AN/SRA-49 Coupler	70K	Yes	124	29,085
44103	Install AN/WSC-3 SATCOM Equipment	123K	Yes	371	87,022

*Includes 2.8% reduction in estimates to reflect FF-1052 Improvement Program.

SECTION II - NAVSEA ALTS

Job Order # 39-654-	Work Description	Alt. ID #	Done on USS HOLT	Man-Day Estimate*	Total $ Estimate
48101	Accomplish NAVSHIPS Work Incidental to ORDALT 6894	187K	No	65	15,246
48101	Accomplish NAVSHIPS Work Incidental to ORDALT 6973	188K	No	30	7,037
49201	Install Lamps Optical Landing System	275K	Yes	23	5,395
51201	Improve Ventilation in 5"/54 Cal. Carrier Room	215K	Yes	341	79,985
51402	Install 74 Ton Air Conditioning Plant	383K	Yes	1952	457,861
52401	Install New Auxiliary Machinery Cooling Pump	378K	Yes	270	63,331
53402	Replace Boiler Bottom/Surface Blow Piping with Monel	379K	Yes	686	160,908
55101	LP Air System Modifications	235K Rev 1	Yes	700	164,192
55103	Replace LP Air Compressors	157K	Yes	629	147,538
55114	Install 2 Type II Dehydrators/Dry Air Modifications	266K	No	505	118,453
55502	Install Deep Fat Fryer Fire Extinguishing System	228K	Yes	129	30,258
59302	Install Sewage Treatment CHT	101K	Yes	4809	1,127,999
59301	Install Distilling Plant Overboard Discharge Piping	169K	Yes	57	13,370
77202	Install Harpoon Weapon System	114K	No	1198	281,003
72201	Install Safety Modifications on ASROC Direct Loader	259K	Yes	98	22,987

*Includes 2.8% reduction in estimates to reflect FF-1052 Improvement Program.

SECTION II - NAVSEA ALTS

Job Order # 39-654-	Work Description	Alt. ID #	Done on USS HOLT	Man-Day Estimate*	Total $ Estimate
83002	Provide Design Waterfront Liaison Services	NA	Yes	440	103,206
99201	Provide Temporary Services and Rigging & Crane Services	NA	Yes	434	101,799

*Includes 2.8% reduction in estimates to reflect FF-1052 Improvement Program.

SECTION III - ORDALTS

Job Order # 39-654-	Work Description	Alt. ID #	Done on USS HOLT	Man-Day Estimate*	Total $ Estimate
48104	Provide Accurate Mechanical Reference for MK 68 Gun Director	7962	Yes	11	2,580
48104	Replace CP-449/SPG-53A 10 Digital Range Computer, MK 154 MOD 0	6894A	No	35	8,210
48104	Provide Simulated Targets for System Testing of AN/SPG-53A	6973	No	10	2,346
48104	Modify AN/SPG-53A Radar Set to Improve Gun Fire Sys Accuracy	7672	No	31	7,271
48104	Modify AN/SPG-53A to Improve Reliability and Maintainability	8709	No	58	13,604
48104	Modify Computer MK 47 MOD 10 to Provide Automatic Control	6948A	No	116	27,209
48104	Install Indicator Panel MK 310 MOD 1 on Gun Director MK 68 MOD 3	7102	No	5	1,173
48903	Modify UBFC Switchboard MK 33 Panel 198	7561	No	3	704
48903	Accomplish Work to Provide Interfaces Between UBFC Switchboard MK 33 & Harpoon Missile System	8619	No	153	35,888
48903	Provide Wiring and Switching of GFC SWBD MK 14 Between Radar Range, Director Bearing, and Harpoon Weapon	8620	No	6	1,407

*Includes 2.8% reduction in estimates to reflect FF-1052 Improvement Program.

SECTION III - ORDALTS

Job Order # 39-654-	Work Description	Alt. ID #	Done on USS HOLT	Man-Day Estimate*	Total $ Estimate
72108	Install Safety Disable-Solenoid Valve on Carriage MK 7 MOD 47	8455	Yes	30	7,037
72108	Final Work & Testing on MK 16 ASROC Launching Group	8896	No	243	56,998
75102	Modifications for Safety and Performance of MK 32 MOD 9 Torpedo Tubes	8197	No	19	4,457

*Includes 2.8% reduction in estimates to reflect FF-1052 Improvement Program.

APPENDIX B

MAJOR SHIPYARD WORK ITEMS OTHER THAN ALTERATIONS

MAJOR SHIPYARD WORK ITEMS OTHER THAN ALTERATIONS

Job Order # 39-654-	Work Description	Compared With USS HOLT Work*	Man-Day Esti-mate**	Total $ Estimate
12301	Repairs and Tests to 43 Tanks		761	$173,204
52001	Repairs and Tests to Sea Chests		515	117,214
16502	Clean/Repair/Groom Sonar Dome & Bow	Part of S/A on HOLT	180	40,968
16702	Replace/Repair 16 Water-Tight Closures	17 less units	202	45,975
17001	Repair/Install/Renew in Mast/Tetrapod Area	Doubled effort	365	83,074
22108	Test/Repair/Overhaul Propulsion Boilers		4970	1,131,172
22109	Repair/Calibrate Automatic Combustion Controls		612	139,291
22110	Repair Boiler Soot Blower Pipings & Valves		172	39,147
24101	Main Reduction Gear Repairs	Doubled effort	282	64,183
24301	Propeller Removal/Repair/Reinstallation	Similar, but no shaft involvement	202	45,975
25101	Class "B" Repairs to 4 Forced Draft Blowers	Similar, except will be done in shop	1519	345,724
25301	Main Steam System Valve Repairs	50% more effort	998	227,145

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**Includes 2.8% reduction in estimates to reflect FF-1052 Improvement Program.

Job Order # 39-654-	Work Description	Compared With USS HOLT Work*	Man-Day Esti-mate**	Total $ Estimate
25401	Repairs to Main Condenser & Air Ejectors		271	61,680
25506	Repairs to 3 Main Feed Pumps/Turbines, and Class "B" Repairs to 3 Main Feed Booster Pumps		1313	344,359
25509	Class "B" Repairs to 3 Auxiliary Condensate Pumps/ Motors, and Main Condensate Pump (#1B), Motors/ Controllers	Similar, except only 1 main cond. pump	482	109,705
15511	Repairs to Feed Water D.A. Tank and Piping	Not done on HOLT	175	39,375
25515	Class "B" Repairs to 2 Fresh Water Drain Tank Pumps/Motors		160	36,416
25601	Class "B" Repairs/Tests to Main, Auxiliary Condensate, & 3 SSTG Circulating Pumps/Motors		257	58,493
25801	Replace/Hydro 50 High Pressure Steam Drain Valves/Lines	40% less effort	190	43,244
25901	Renew/Repair Boiler Uptake Joints/Door/Insulation		278	63,273
26101	Class "B" Repairs to 2 Main and Inport Fuel Oil Service Pump/Motors		165	37,554
26103	Test & Flush Piping and Repair Valves of Fuel Oil Service System	190% more effort	455	103,558
26201	Overhaul and Test Attached & Standby Lube Oil Pumps		207	47,113
26202	Repair/Test Lube Oil System Components		161	36,644

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Job Order # 39-654-	Work Description	Compared With USS HOLT Work*	Man-Day Esti-mate**	Total $ Estimate
31102	Repairs to & Test of 3 Ship's Service Turbo-Generators		1246	283,590
31101	Repairs/Overhaul of Ship's Service Diesel Generators Components	Doubled effort	673	153,175
31401	Overhaul 2 400Hz Motor Generator Sets, 7 Circuit Breakers, and Calibrate 20 Meters for Electrical Switchboards 1S and 2S	MG overhauls add 80% more effort	420	95,592
31102	Overhaul/Repair/Flush SSTG Lube Oil Systems Components		199	45,292
34201	Overhaul/Repair SSDG Support System Components	180% more effort	137	31,181
41101	Class "B" Repairs to 7 Radar PPI's, Switchboard, and trainer	130% more effort	581	132,236
42301	Replace/Renew TACAN and LORAN "A" Antenna Systems		111	25,264
42601	Overhaul/Modify/Calibrate U/W Log and DRT/DRAI/ NC-2 Equipment		310	70,556
42602	Class "B" Repairs to Gyro Compass and 12 Repeaters	11 more repeaters	135	30,726
43603	Repair Alarm, Safety, and Warning IC Circuits	Deferred on HOLT	124	28,222
43701	Repair Indicating, Order, and Metering IC Circuits	30% more effort	171	38,920

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Job Order # 39-654-	Work Description	Compared With USS HOLT Work*	Man-Day Esti-mate**	Total $ Estimate
44106	Repair/Overhaul Various Radio System Components	40% less effort	222	50,527
45101	Overhaul/Replace/Repair Surface Search Radar Components	Doubled effort	136	30,954
45201	Overhaul/Replace/Repair Air Search Radar Components	10% more effort	397	90,357
45501	Class "B" Repair/Calibrate IFF System Components	Not done on HOLT (S/A installed)	226	51,438
46301	Repair Bow Sonar Set Power Supply Components		459	104,468
46302	Class "B" Repair AN/SQS-26CX Bow Sonar		791	180,032
47101	Class "B" Repair/Refurbish/Replace Active ECM System Components		212	48,251
47201	Class "B" Repairs/Refurbish/Replace/Passive ECM System Components	40% more effort	490	111,524
48103	Class "B" Repairs to MK68 GFCS Components		996	226,690
48109	Conduct Drydock/Afloat GFCS Battery Alignment	Not done on HOLT	267	60,769
48112	Conduct Integrated Weapons/Electronics Systems Test	Not done on HOLT	525	119,490
48301	Class "B" Repairs to MK53 Underwater Battery FCS Console	50% less effort	143	32,547

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Job Order # 39-654-	Work Description	Compared With USS HOLT Work*	Man-Day Esti-mate**	Total $ Estimate
50801	Repair/Renew Lagging in Machinery Spaces		498	113,345
51201	Ventilation/Cooling Modifications and Overhaul of 13 Vent Fans	Similar, plus 13 fans	465	105,834
51302	Machinery Spaces Vent Duct Repairs and Fan Overhauls (6)	Similar effort, 2 less fans	285	64,866
51403	Overhaul/Clean/Test Air Conditioning System Components		608	138,381
51601	Overhaul/Repair, Clean, Test or Calibrate Reefer Plant Refrigeration System Components		226	51,438
52001	Repair/Test 46 Sea Valves		546	124,270
52101	Renew 4 Firepumps; Repair Motors and Controllers	Replace pumps, vice repair	354	80,570
52102	Chill Shock Clean, Hydro Test, and Repair Firemain & Flushing System Piping	90% more effort	235	53,486
52201	Repairs/Modifications to Magazine Sprinkler Systems		195	44,382
53104	Repair/Clean/Hydro Distilling Plant Components		691	157,272
53301	Repair 3 Potable Water Pumps/Motors	Not done on HOLT	150	34,140
53401	Class "B" Repairs/Repair/Replace Auxiliary Steam System Components	50% more effort	720	163,872

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**Includes 2.8% reduction in estimates to reflect FF-1052 Improvement Program.

Job Order # 39-654-	Work Description	Compared With USS HOLT Work*	Man-Day Estimate**	Total $ Estimate
53407	Manufacture/Install New CRES Fresh Water Drain Tank		125	28,450
55103	Overhaul of 2 HP Air Compressors/Motors;Repair of System Components	60% more effort	631	143,616
55105	Repair/Test/Flush/Calibrate HP Air System Piping/ Components		378	86,033
55107	Class "B" Repair Prairie-Masker System Piping/ Emitter/Components		376	85,578
55111	Repair/Test/Calibrate LP Air System Piping/Components	Part of S/A on HOLT	119	27,084
56101	Repair/Test Components of Steering Gear System	Only minor repairs on HOLT	447	101,737
56602	Overhaul/Test Fin Stabilizer Control System		274	62,362
57101	Repair/Test Forward/Midships/Aft RAS Stations	Not done on HOLT	111	25,264
58101	Sandblast/Inspect/Represerve Anchors and Chains	Similar (less chain locker preservation)	188	42,789
58301	Repair/Overhaul/Test Boat Wiches and Davits		506	115,166
63102	Clean Represerve Underwater Hull to Edge of Main Deck		494	112,434
63103	Clean/Paint Machinery Space Bilges and Fire Room	40% less effort	1084	246,718

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Job Order # 39-654-	Work Description	Compared With USS HOLT Work*	Man-Day Esti-mate**	Total $ Estimate
63302	Inspect/Repair/Test Cathodic Protection System	Not done on HOLT (S/A accomplished)	178	40,513
65101	Repair/Replace/Test 16 Items of Commissary Equipment	225% more effort	339	77,156
71101	Repair/Checkout Gun Mount 51	140% less effort	130	29,588
72103	Exchange ASROC Launcher; Overhaul MK 199 LCCP		306	69,646
81001	Production Engineering Planning Services		348	79,205
90001	Allowance for Growth Work		2988	680,069
98001	Ship Superintendent Work Authorization		297	67,597
98201	Trials and Tests Post Overhaul Allowance		124	28,222
98802	Assist Ship's Force Allowance		186	42,334
99101	Provide/Reinstall Temporary Shipping Access	More effort due additional access needed	660	150,216
99201	Service Connections/Rigger & Crane Services		705	160,458
99401	Maintenance of Safe Working Environment		121	27,540
99402	Bilge and Tank "Wheelering"/Cleaning		641	145,892
99701	Docking and Undocking Services		335	76,246

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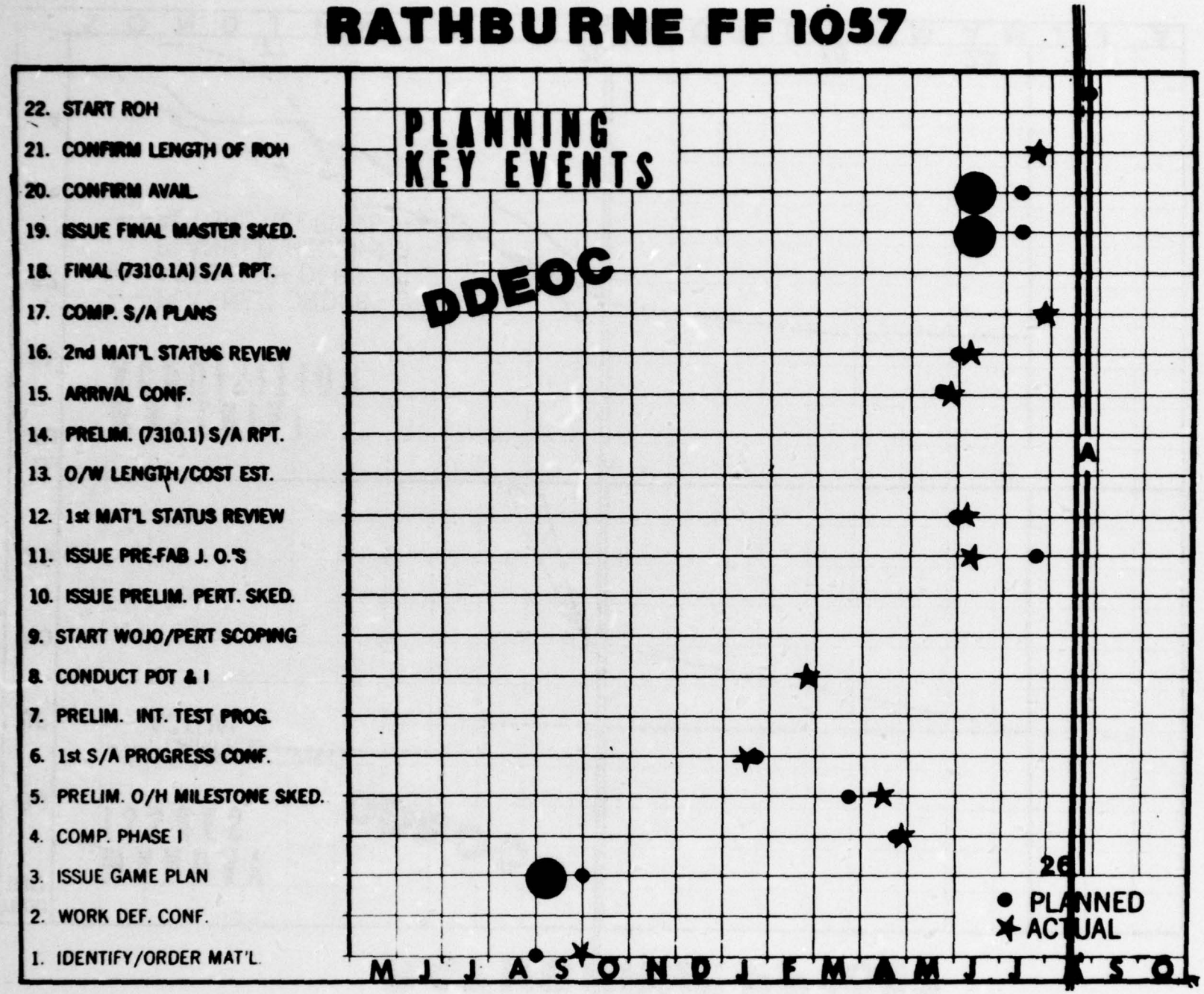
APPENDIX C

OVERHAUL PROGRESS CHARTS FOR USS RATHBURNE

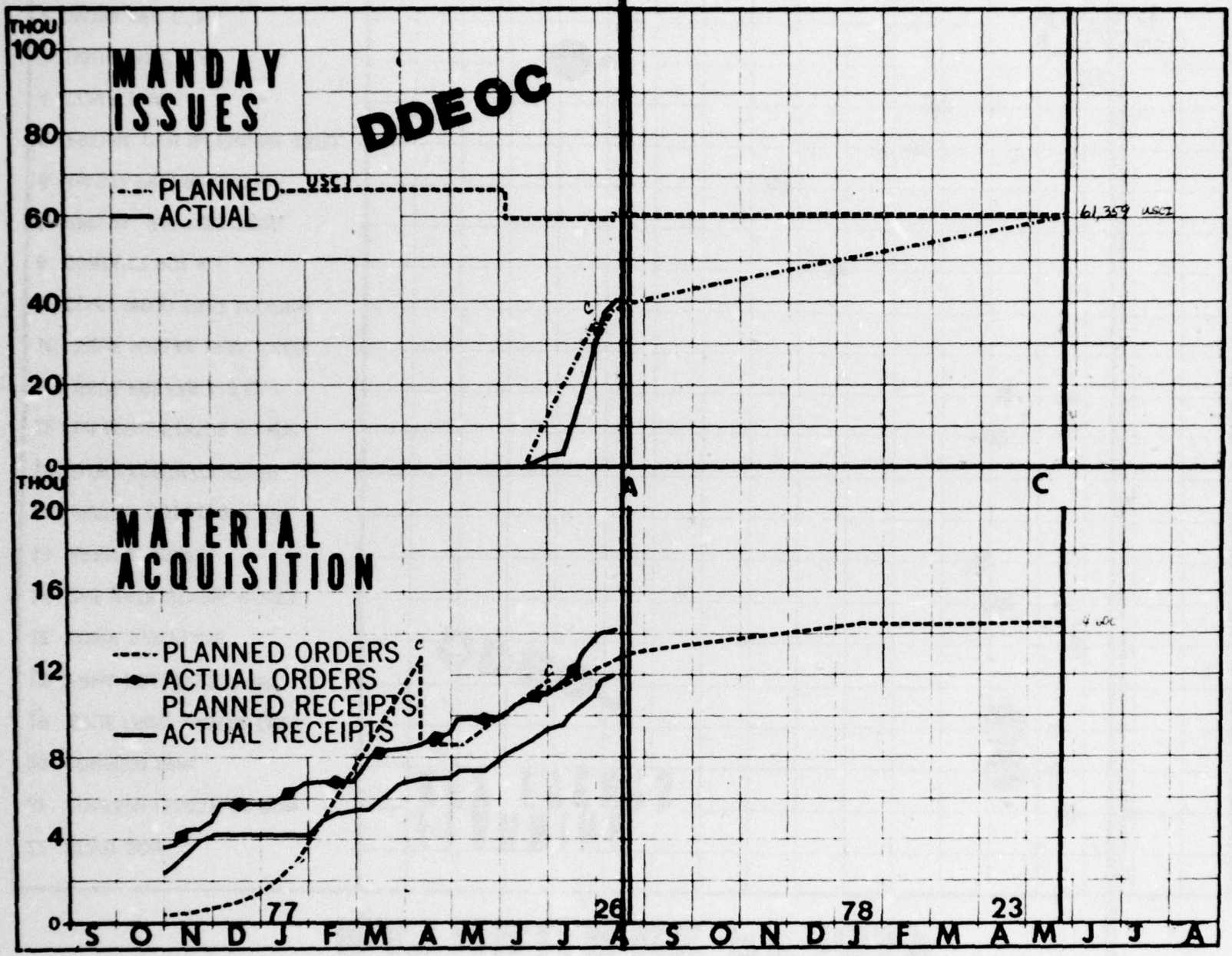
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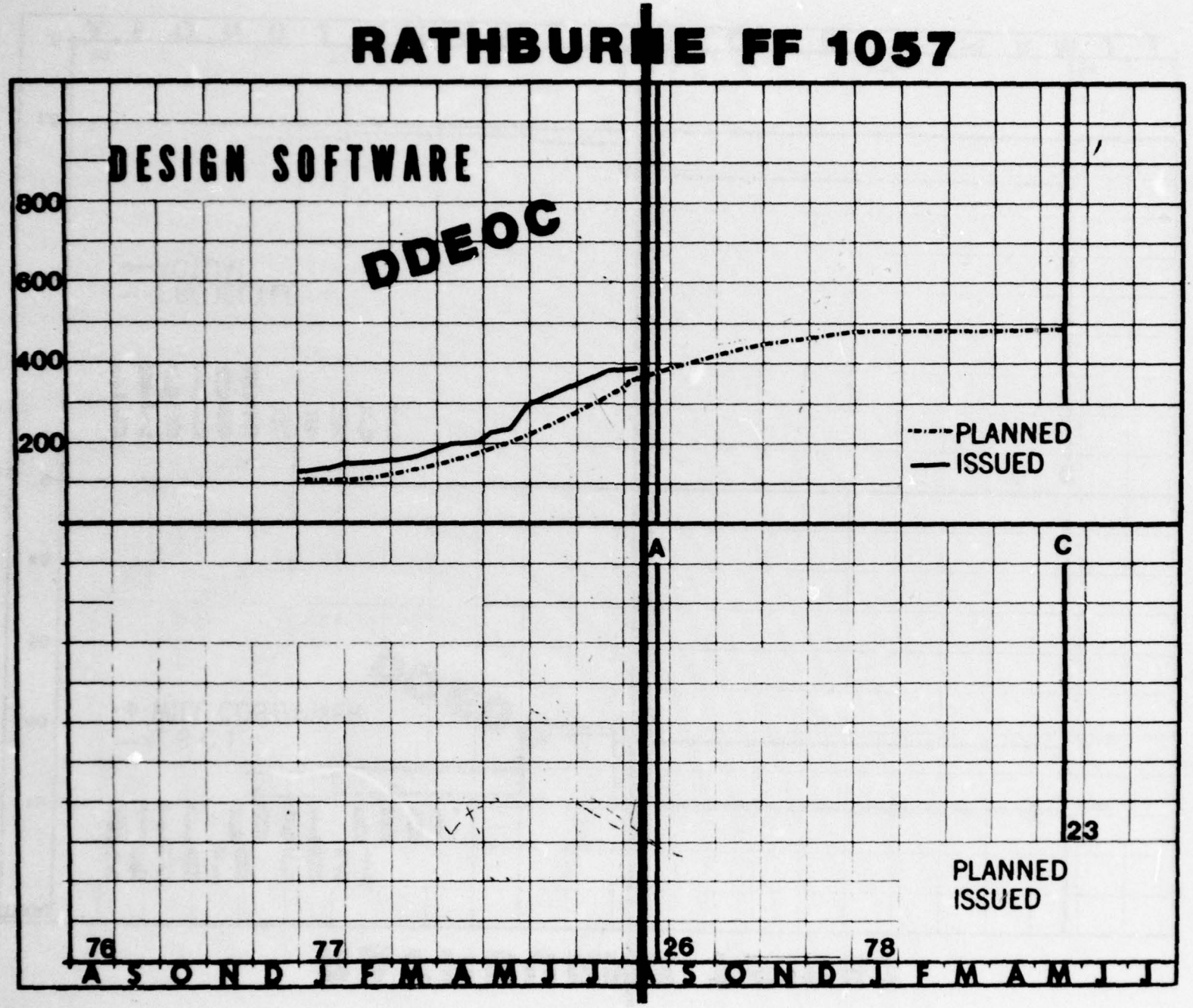
Chart	Subject	Page
1	Planning Key Events	C-3
2	Manday Issues and Material Acquisition	C-4
3	Design Software	C-5
4	Should Cost/Will Cost Projections; Performance Factor	C-6
5	TYCOM Cost and Manday Report	C-7
6	NAVSEA Cost and Manday Report	C-8
7	Percent Complete; Production Manning	C-9

RATHBURNE FF 1057

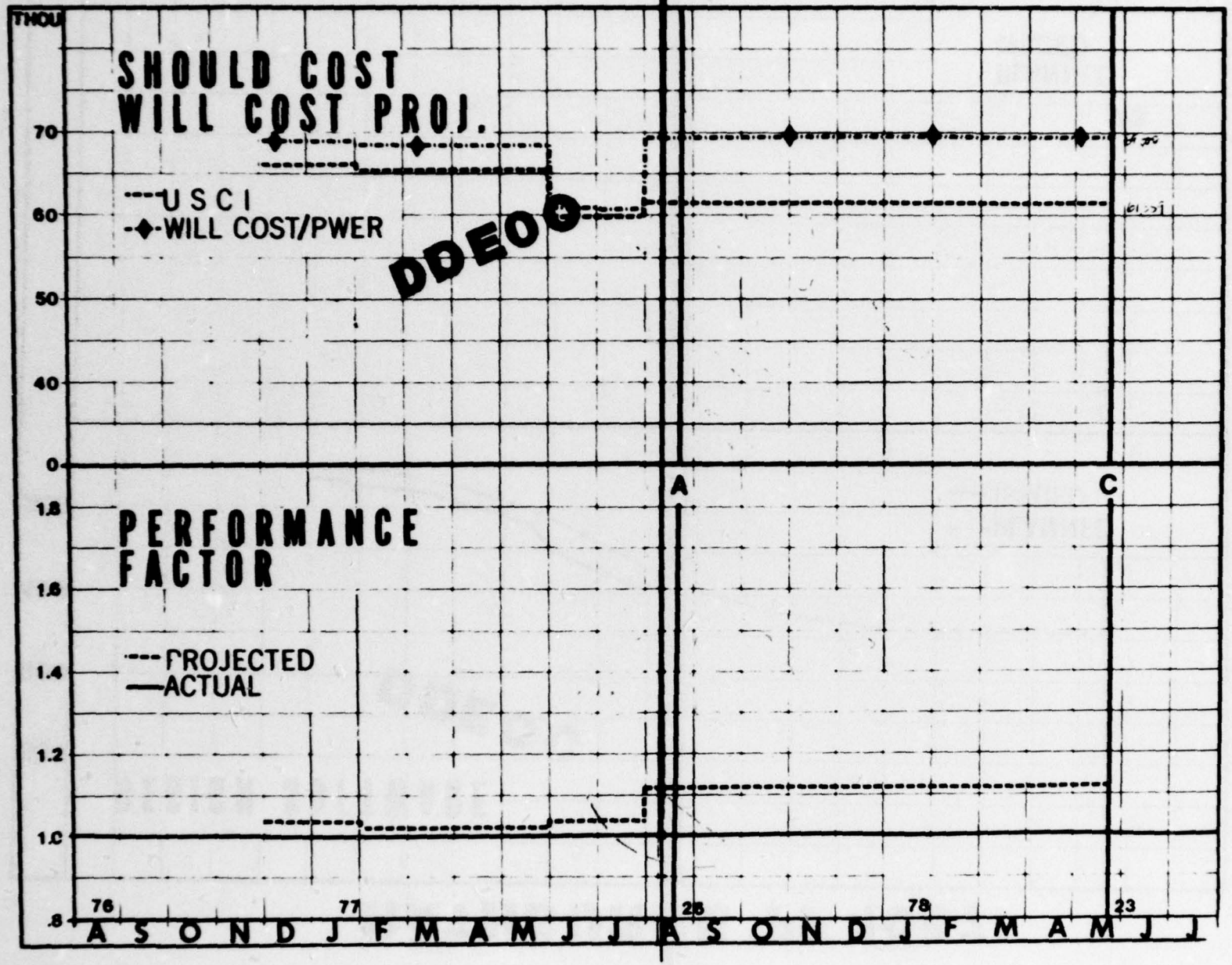


RATHBURNE FF 1057

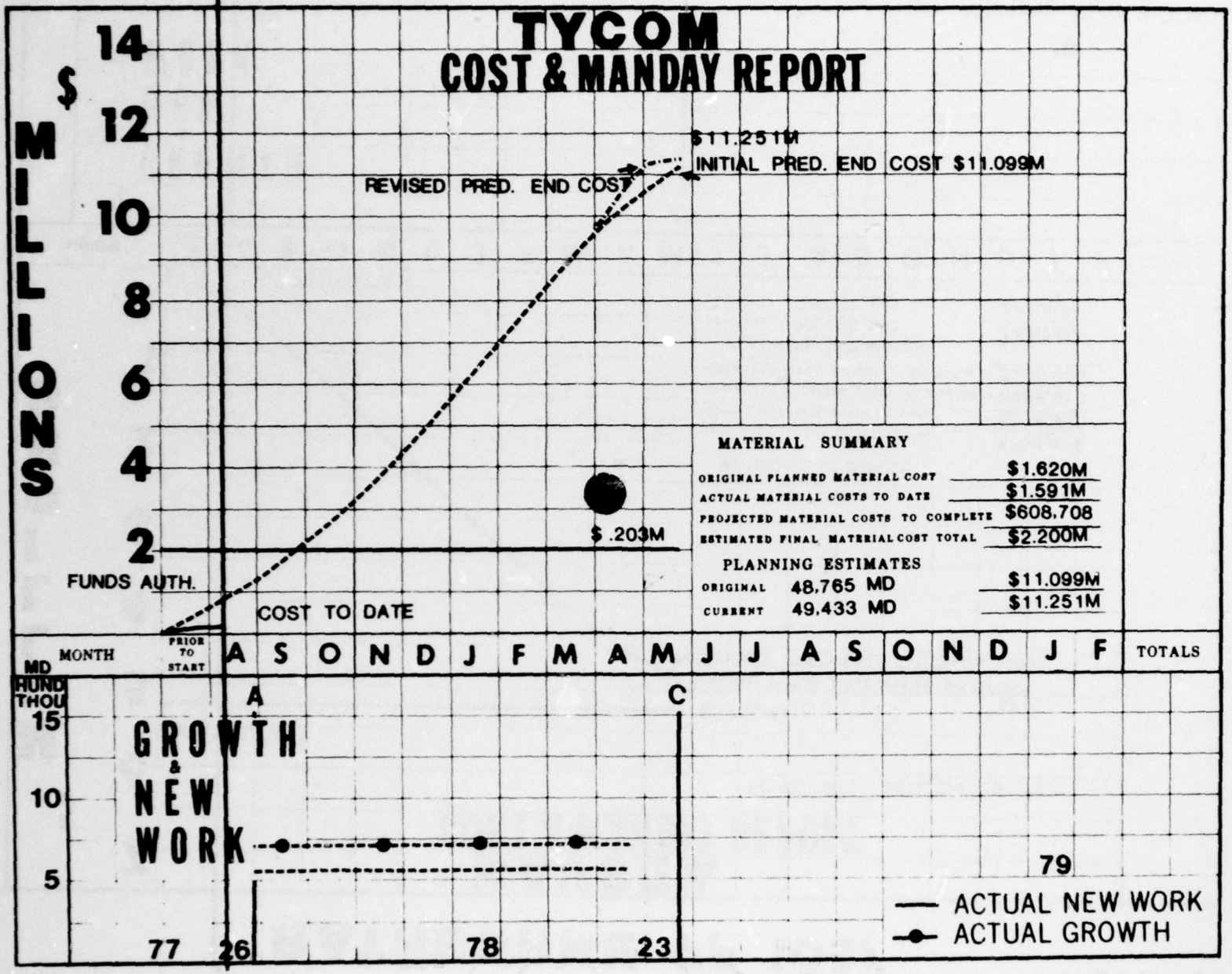



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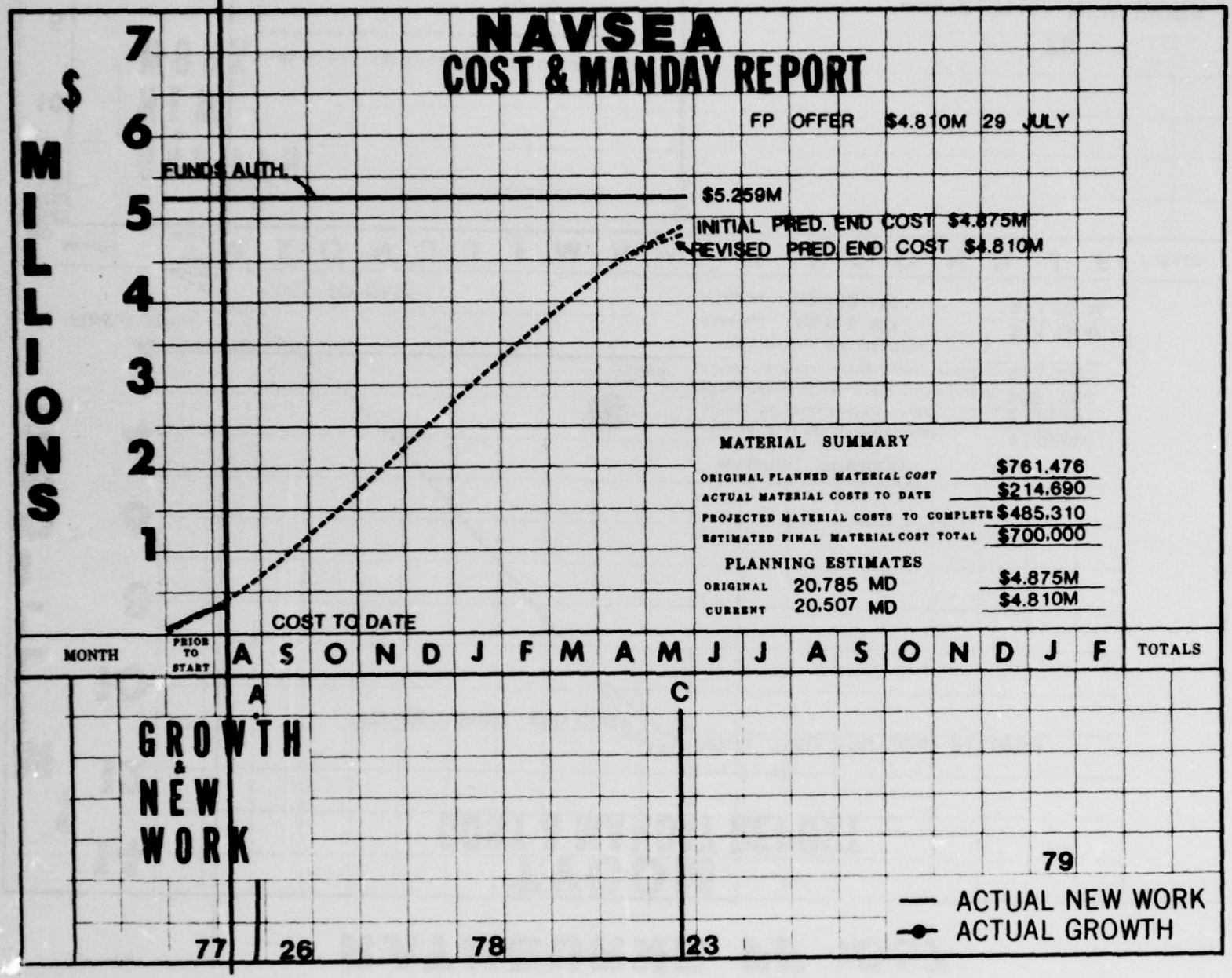
RATHBURNE FF1057



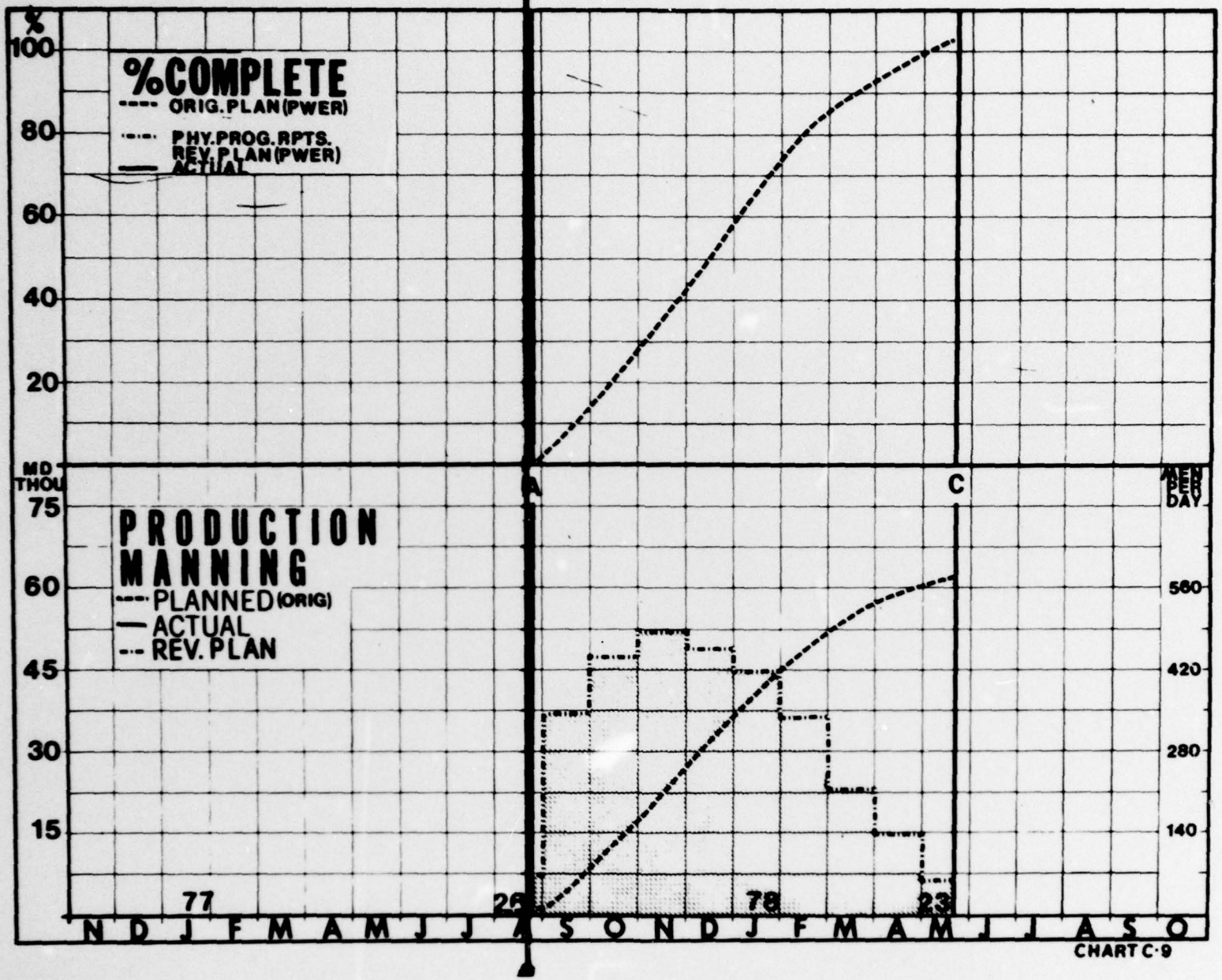
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